

1499

Genus Hippocampus Rafinesque

Hippocampus Rafinesque, Ind. Itt. Sicil., p. 37, 1810. (Type Syngnathus hippocampus Linnaeus, tautotypic.)

Macleayina Fowler, Proc. Acad. Nat. Sci. Philadelphia, p. 426, 1907 (January 28, 1908). (Type Hippocampus bleekeri Fowler, orthotypic.)

Farlapisces Whitley, ~~Rev.~~ Austral. Zoologist, vol. 6, pt. 4, p. 313, February 13, 1931. (Type Hippocampus breviceps Peters, orthotypic.)

Body strongly compressed, more or less elevated, belly gibbous, rings 10 to 12, tapers abruptly to long quadrangular prehensile tail. Head without distinct curved neck, placed nearly at right angle with direction of body, surmounted by compressed occipital crest on top of which angular star-like coronet. Opercle with convex keel bent upwards to gill opening. Top and sides of head with spines. Appearance remarkably horse like, similar to conventional knight at chess. Body and tail covered with bony plates forming rings, on body each with 6 spines or tubercles, on tail with 4. Usually no cutaneous flaps. Dorsal moderate, opposite

of caudal peduncle $3\frac{2}{3}$ to $4\frac{2}{5}$;
pectoral $1\frac{2}{5}$ to $1\frac{3}{4}$; ventral 2 to
 $2\frac{1}{5}$.

Generally light brown, forming nearly whitish reticulating lines around variably hexagonal, pentagonal or rounded deep brown blotches. These latter very variable, sometimes several may be fused to form longitudinal bands variably short or long. Sometimes several groups of dark blotches may be emphasized along bases of dorsals to show several dark saddle like blotches. Often on belly white reticulations may be broad as the spots which thus appear well separated. Iris brown. On fins white reticulations or lines usually

vent, on elevated base on trunk and tail. Anal usually present, minute. Pectoral present, short, broad.

Numerous species in all warm seas. They swim vertically in the water, head uppermost, by vibrating the dorsal fin. Attached by their prehensile tails to seaweed and other floating objects they are carried frequently great distances by currents. The egg pouch of the male a prominent sac at base of tail, ending near vent.

Hippocampus tristis ^{doubtful} ¹⁵⁰² Castelnau

Hippocampus tristis Castelnau,
Proc. Zool. Acclimat. Soc. Victoria,
vol. 1, p. 197, ^{July 15,} 1876² (type locality,
Victoria); Proc. Linn. Soc.
New South Wales, vol. 3, p. 356,
1878 (Port Jackson). — Macleay,
Proc. Linn. Soc. New South Wales,
~~vol. 3, p. 356, 1878~~ vol. 6, ~~pt. 2~~ p. 306,
1882 (copied). — McCulloch,
Mem. Austral. Mus., vol. 5, pt. 1,
p. 96, June 29, 1929 (reference).

Rather dark uniform brownish generally, without any dark longitudinal bands. Body and fins everywhere, except pectorals, marked with very fine or small blue gray dots; one on each scale exposure, at rather even intervals on body, though on fins they form longitudinal gray lines or streaks terminally. All vertical fins and ventrals much darker than body. Iris dark brown, with radiating light lines.

Pectoral uniform pale brown.

Only known from the type, described above and quite different from Calliopsis niver in its fine blue white dots.

22695. Gune Road, Gillolo Island, Dutch East Indies. December 1, 1909.

Length 93 mm.

(Argus, with reference to the numerous pale dots.)

Tail rather short.

1503

Rings covered with transverse stripes. Anterior abdominal crest divided in points usually bifid. No filaments.

Dorsal with longitudinal brown band, rays marbled with same color. Length not given. (Castelnau.)

Victoria. An imperfectly described species not seen since originally noticed.

head; caudal 3 in rest of fish.

Brown on back and above, paler to whitish below. Snout and edges of lips dark. Barbels brownish. Iris slate (evidently silvery white in life). On side of body 5 pale or whitish, parallel, longitudinal bands, interspaces of dark color forming alternate bands broader, also third pale line obscure or absent on tail. Third dark longitudinal band reflected out on median caudal rays. Dorsal pale, with longitudinal dark band subbasal. Other fins all pale to whitish.

A. N. S. P., No. 60187, Nakon
Sritamarat, Peninsular Siam.

May 21, 1933. Length 80 mm. Type.

— A. N. S. P., No. 60188, paratype,
same data. Length 74 mm.

Analysis of Species

1504

a. Hippocampus. D. 13 to 22.

b.¹ D. 13 or 14; coronet high. coronatus.

b.² D. 15 to 18; caudal rings 30 to 37.

c.¹ Tubercles on keels developed into long slender spines.

d.¹ Snout $2\frac{1}{2}$ or less in head; dorsal uniform.

e.¹ Breast spines single on each side. histrix.

e.² Breast spines double on each side. erinaceus.

d.² Snout $2\frac{1}{2}$ in head; dorsal with dark submarginal band. spinosissimus.

c.² Knob like tubercles on ends of spines of head; curved rings of trunk and tail with spines hooked backward. comes.

c.³ Tubercles on keels rounded, not developed into long slender spines.

f.¹ Snout less than half of head, or very short.

g.¹ Tail rings 30 to 33, uniform dark brown. fuscus.

- 1505
- g.² Tail rings 34; dorsal with dark submarginal band. capensis.
- g.³ Tail rings 37; coloration variable. mohnikei.
- f.² Snout half, or more than half of head.
- h.¹ Coronet oblique, with at least 5 low knobs.
- i.¹ Usually 2 supraocular spines.
- j.¹ Posterior supraocular spine much larger; no filaments.
- k.¹ D. 18; dorsal uniform. longirostris.
- k.² D. 16; dorsal with dark submarginal band. borbonensis.
- i.² Usually single supraocular spine.
- l.¹ No filaments.
- m.¹ D. 18.
- n.¹ Brown, head varied yellowish (Indian Ocean). camelopardalis.
- n.² Gray yellow, with irregular obscure transverse marblings or spots (Western Australia). elongatus.

1506

n.³ Yellow, narrow transverse
dark bands on snout
(Western Australia).

subelongatus.

m.² D. 16 or 17.

whitei.

l.² Filaments often present;
D. 16 to 18.

kuda.

h.² Coronet convex rounded knob
(Red Sea).

fuscus.

b.³ D. 19 to 22; caudal rings 38 to 42.

o.¹ Snout $1\frac{3}{5}$ to 2 in head.

p.¹ Supraorbital spine oblique,
rather blunt.

g.¹ Eye $3\frac{1}{2}$ to 4 in head.

dahli.

g.² Eye 6 to 7 in head.

trimaculatus.

p.² Supraorbital spine erect,
pointed.

angustus.

o.² Snout 3 in head.

breviceps.

a.² maculayina. D. 28 or 29, rings 12 trunk
and 47 or 48 caudal.

abdominalis.

Hippocampus coronatus Schlegel

Hippocampus coronatus Schlegel, Fauna
Japonica, Poiss., pt. 15, p. 274, pl. 120,
fig. ^{7 (not 8 as given in text)} 1850 (type locality, Japan).

Archiv Naturges., 1853, pt. 1, p. 229 (reference);

— Kaup, Cat. Lophobr. Fish Brit. Mus.,
p. 16, pl. 4, fig. 2, 1856 (Japan; China).

— Günther, Cat. Fish. Brit. Mus.,
vol. 8, p. 205, 1870 (compiled). —

Duméril, Hist. Nat. Poiss., vol. 2, p.
520, 1870 (Japan). — ^{and Matsuura} Ishikawa,

— Károli, Termész. Füzetek, Buda
pest, vol. 5, p. 40, 1882 (Surawaka,
Borneo).

(reference); Proc. U. S. Nat. Mus.,
vol. 24, p. 18, 1902 (Matsushima;
Tokyo; Misaki; Anomichi; Wakanoura).

— Franz, Abhandl. Kon. Bayer. Akad.
Wiss., vol. 4, Suppl. Band 1, p.
23, 1910 (Misaki; Hakodate). —

Hippocampus coronatus Schlegel

Hippocampus coronatus Schlegel, Fauna
Japonica, Poiss., pt. 15, p. 274, pl. 120,
fig. ^{7 (not 8 as given in text)} 1850 (type locality, Japan).
Archiv. Naturges., 1853, pt. 1, p. 229 (reference);

— Kaup, Cat. Lophobr. Fish Brit. Mus.,
p. 16, pl. 4, fig. 2, 1856 (Japan; China).

— Günther, Cat. Fish. Brit. Mus.,
vol. 8, p. 205, 1870 (compiled). —

Duméril, Hist. Nat. Poiss., vol. 2, p.
520, 1870 (Japan). — ^{and Matsuura} Ishikawa,

Cat. Fish. Mus. Tokyo, p. 4, 1897.

— Jordan and Snyder, Annot.

ool. Japon., vol. 3, p. 59, 1901

(reference); Proc. U. S. Nat. Mus.,

vol. 24, p. 18, 1902 (Matsushima;
Tokyo; Misaki; Anomichi; Wakanoura).

— Franz, Abhandl. Kon. Bayer. Akad.
Wiss., vol. 4, Suppl. Band 1, p.
23, 1910 (Misaki; Hakodate). —

520, 1870
Oct. 1870
at. Ark.
Jordan
reference
1870

Genus *Perkhombus* L.
curalis, *Synbranchus* 36
Gregoryina 223
Gregoryina 223
Gregoryina 223

Serranus fuscoguttatus (Forskål).

Perca summana fuscoguttata Forskål,
Descript. Animal., 1775, pp. XI, 42. Suerens,
Aljédda. — Smelin, Syst. Nat. Linn., vol. 7,
1789, p. 1317 (Arabia).

Serranus fuscoguttatus Rüppell, Atlas
Reise nördl. Afri. ^{part} Fische, 1828, p. 108, pl. 27,
 fig. 2 (Red Sea). — Peters, Arch. Naturg.,
 1855, p. 235 (Mozambique). — Günther,
Cat. Fishes Brit. Mus., vol. 1, 1859, p. 127
 (Port Essington). — Kner, Reise Novara,
Zool., vol. 1, pt. 5, 1865, p. 22 (Australia).
 — Guichenot, Mem. Soc. Hist. Nat.
Cherbourg, ser. 2, vol. 2, 1866, p. 148
 (Madagascar). — Martens, Verh. zool.
bot. Gesell. Wien, vol. 16, 1866, p. 378
 (Mussa Ebei, Red Sea). — Playfair,
Fishes Zanzibar, 1866, p. 5 (Zanzibar).
 — Günther, Ann. Mag. Nat. Hist., ser. 3,
 vol. 20, 1867, p. 57 ^{East Africa} (Hope Islands, Port
 Port Essington,

Jordan, Tanaka, Snyder, Journ.
College Sci. Tokyo, vol. 33, p. 100, 1913
(reference). — Weber and Beaufort,
Fishes Indo Austral. Archip., vol.
4, p. 113, 1922 (compiled).

Hypocampus coronatus Anonymous,
Illustrat. Jap. Aquat. Plants
Anim., vol. 1, pl. 19, fig. 2, 1913 (error).

Epinephelus fuscoguttatus Bleeker,
Atlas Ichth. Ind. Néerl., vol. 7, 1873-76,
 p. 57, pl. (29) 307, fig. 3 (Singapore, Java,
 Bawean, Timor, Ternate, Waigiu). —
Boulenger, Cat. Fishes Brit. Mus., vol. 1,
 1895, p. 249 (Mauritius, Zanzibar, Seychelles,
 Borneo, Philippines, Hope Island, Tongatabu,
 Samoa, Greenwich Island, Meduro). —
Steindachner, Abhandl. Senckenberg.
Nat. Gesell., vol. 25, 1900, p. 413
 (Ternate). — Jordan and Evermann, Proc. U.
S. Nat. Mus., vol. 25, 1902, p. 341 (Formosa).
 — Regan, Journ. Bombay Nat. Hist. Soc.,
 vol. 16, no. 2, 1905, p. 329 (Persian Gulf). —
Jordan and Seale, Bull. Bur. Fisher.,
 vol. 25, 1905 (1906), p. 259 (Arica). —
Weber, Siboga Exped., vol. 65, 1913, p. 206
 (Salomakie, Saleyer, Haingsisi). —
Regan, Ann. Durban Mus., vol. 2, 1917-20,
 p. 197 (Durban, Natal). — Fowler and Bean,

Trunk $1\frac{2}{3}$ to 2 in tail; head $1\frac{1}{2}$ to $1\frac{2}{3}$ in trunk. Snout equals postorbital, slender, $1\frac{1}{2}$ to $1\frac{3}{4}$ in body depth; eye 3 in snout; cornea very high, pedunculate, not divided in 2 parts at top, variable long or ~~about~~ from gill opening to snout, tip rounded with 6 lobes or spines; spines of head and body prominent, cornea usually with long filament and other spines occasionally prominent.

Rings 10 + 38 to 40. First, fourth and tenth trunk rings prominent and usually fourth, sixth, tenth, fourteenth and sixteenth of tail. Spines at dorsal base especially long and prominent.

D. 13 or 14, on 1 or 2 body and

Can 129

666

Sparus cristiceps (Cuvier)

Chrysophrys cristiceps Cuvier, Hist. Nat. Poiss., vol. 6, 1831, p. 132. Cape of Good Hope.

$\frac{1}{m}$ Pappe, Synopsis Edible Fishes Cape, 1853, p. 19 (Table Bay at Roman Rock).

$\frac{1}{m}$ Bleeker, Natuurk. Tijdschr. Nederl. Indië, vol. 21, 1860, p. (50, 52) 60

(Cape of Good Hope). $\frac{1}{m}$ Castelnau, Mem. Poiss. Afrique Australe, 1861, p. 22.

(Simon's Bay, Roman Rock, Table Bay, Cape of Good Hope).

Sparus cristiceps Barnard, Ann. South African Mus., vol. 21, pt. 2, 1927, p. 700, pl.

29, fig. 1 (Table Bay, False Bay, Agulhas Banks, Algoa Bay, Natal, 50 fathoms).

Chrysophrys laticeps (not Cuvier) Pappe, Synopsis Edible Fishes Cape, ed. 2, 1866,

p. 13. $\frac{1}{m}$ Gilchrist and Thompson, Marine Biolog. Rep. South Africa, no. 2, 1914, p. 101.

$\frac{1}{m}$ Thompson, Marine Biolog. Rep. South Africa,

3 caudal rings; pectoral rays
11; egg pouch on 7 rings.

Color various, usually light brown with dark dots and mottlings, sometimes with pale dots and streaks, sometimes with dark brown streaks, sometimes ground color almost black. Usually light or dark streaks on opercle. Dorsal usually with blackish band and pale edge, sometimes streaked like body. Length 115 mm.

(Jordan and Snyder.)

Japan. A small slender species with a remarkably high coronet.

incisors, truncate, ends entire; row of small inner teeth behind incisors; molars usually in 1 or 2 rows, no teeth on palate. Hind nostril slit like. Gill rakers short, slender, 6 or 7 + 11 to 14. Branchiostegals 6. Vertebral 23, of which 13 caudal. Intestine short. Pyloric coeca 5 to 8. Scales small. Tubes in lateral line sometimes bifurcate on posterior scales. Cheeks scaled. Dorsal spines 11 or 12, strong, depressible in groove, rays 12 to 15. Anal spines 3, rather strong, rays 11 to 14. Caudal forked. Color silvery, with black blotch frequently on back of tail. Young with black cross bars.

A large group of omnivorous fishes of both shores in the warmer Atlantic, southern and eastern Africa

1511

Hippocampus histrix Kaup

- Hippocampus histrix Kaup, Cat.
Lophobr. Fish Brit. Mus., p. 17, pl. 2,
fig. 5, 1856 (type locality, Japan).
— Jordan and Snyder, Proc. U. S.
Nat. Mus., vol. 24, p. 16, 1901 (1902)
(reference). — Jordan, Tanaka,
Snyder, Journ. College Sci. Tokyo,
vol. 33, p. 99, 1913 (reference). —
Weber, Siboga Exped., vol. 57, Fische,
p. 119, 1913 (Macassar; Aru Islands).
— Chu, Biol. Bull. St. John's Univ.,
no. 1, p. 98, January 1931 (China?).
3 — Borodin, Bull. Vanderbilt Marine
Mus., vol. 1, art. 3, p. 75, 1932
(Southport, Queensland).
— Fowler, Mem. Bishop Mus., vol. 10, p.
115, 1928 (Tahiti; Hawaii).

usually obsolete. Gill rakers $13+17$, all short, truncate, with coarse prickles, shorter than gill filaments, which $\frac{3}{5}$ of eye; 8 or 9 above and below rudimentary.

Scales 75 to 90 in lateral line to caudal base and 10 to 13 more on latter; tubes 58 to 62 in lateral line to caudal base and 10 to 12 more on latter; 15 to 22 scales above, 27 to 32 below, 75 to 78 predorsal, 35 to 37 rows across cheek to preopercle edge; scales smooth, small or minute on head and fins; maxillary with $\frac{3}{4}$ of expansion finely scaled. Scales with 8 to 16 basal radiating striae; circuli fine.

D. XI, 14, I or 15, I, third spine $3\frac{1}{4}$ to $3\frac{1}{2}$ in total head length, fifth ray

Hippocampus hystrix Günther,

Guichenot, Notes Ile Réunion, vol. 2,
p. 30, 1862. —

— Duméril, Hist. Nat. Poiss., vol. 2,
p. 514, 1870 (Japan; Réunion). —

Day, Fishes of India, pt. , p. 683,
pl. 176, fig. 2, 1878 (Calcutta; Andamans).

Fauna British India, Fishes, vol. 2,
p. , 1889. — Jordan and Snyder,

Annot. Zool. Japon., vol. 3, p. 57, 1901
(reference). — Duncker, ~~Notiz~~

Mitteil. Naturh. Mus. Hamburg,
vol. 21, p. 189, 1903 (1904) (Singapore).

— Günther, Journ. Mus. Godeffroy,
vol. 9, p. 436, pl. 167, fig. 12, 1910

(Tongatabu; New Pomerania;
Society Islands).

1512

Hippocampus hystrix Günther,
Fishes of Zanzibar, 1866, p. 139
Zanzibar); Cat. Fish. Brit.
Mus., vol. 8, p. 206, 1870 (Zanzibar).
— Duméril, Hist. Nat. Poiss., vol. 2,
p. 514, 1870 (Japan; Réunion). —
Day, Fishes of India, pt. , p. 683,
pl. 176, fig. 2, 1878 (Calcutta; Andamans).
Fauna British India, Fishes, vol. 2,
p. , 1889. — Jordan and Snyder,
Annot. Zool. Japon., vol. 3, p. 57, 1901
(reference). — Duncker, ~~Naturh.~~
Mitteil. Naturh. Mus. Hamburg,
vol. 21, p. 189, 1903 (1904) (Singapore).
— Günther, Journ. Mus. Godeffroy,
vol. 9, p. 436, pl. 167, fig. 12, 1910
(Tongatabu; New Pomerania;
Society Islands).

5543.

Catmon Bay, Masbate.

18. 1908.

Length 310 mm.

Hippocampus

ishes of Zanzibar.

Zanzibar

mus., vol. 8,

Depth $2\frac{7}{8}$ to 3; head $2\frac{1}{4}$ to $2\frac{1}{3}$, width $2\frac{1}{2}$ to $2\frac{2}{3}$. Snout $4\frac{1}{2}$ to 5 in head from snout tip; eye $5\frac{3}{4}$ to $7\frac{7}{8}$, $1\frac{2}{5}$ to $1\frac{4}{5}$ in snout, little greater than interorbital in young; maxillary reaches eye diameter beyond eye, expansion 1 to $1\frac{1}{5}$ in eye, length 2 to $2\frac{1}{5}$ in head from snout tip; teeth fine, outer row in each jaw moderate; along sides of mandible 2 inner rows of depressible teeth, innermost row longest; small teeth on vomer and palatines; hind nostril greatly enlarged at all ages, large as pupil; interorbital $6\frac{5}{6}$ to $7\frac{1}{8}$ in head from snout tip, very slightly convex; preopercle edge finely serrated, without spines at angle; 2 opercular spines, lower little advanced, if third upper present

Hippocampus jayakari Boulenger,
Ann. Mag. Nat. Hist., ser. 7, vol. 6,
p. 51, fig., 1900 (type locality,
Muscat, Eastern Arabia).

Inside gill opening brownish. Iris brownish-green. Marginal portions of vertical fins dusky or blackish. Markings on spinous dorsal diffuse and indistinct, other fins with rather large spots of blackish brown, paler basally and in transverse series on caudal. Paired fins spotted, also in more or less transverse series, with pale and whitish reticulated lines between.

Red Sea, Persian Gulf, Zanzibar, Mozambique, Natal, Mauritius, Madagascar, Seychelles, India, Ceylon, East Indies, Philippines, Formosa, China, Japan, New Zealand, Micronesia, Polynesia. The species is very variable in coloration. Some specimens are finely spotted with dark brown all over the lower

Depth $8\frac{1}{4}$ to 9; head $4\frac{1}{2}$ to $4\frac{4}{5}$, width $3\frac{3}{4}$ to $4\frac{1}{5}$. Snout 2 to $2\frac{1}{10}$ in head from snout tip; eye $5\frac{3}{4}$ to 6, $2\frac{1}{2}$ to $2\frac{3}{5}$ in snout from snout tip; greatly exceeds interorbital; maxillary $1\frac{1}{4}$ in eye; interorbital $1\frac{3}{4}$, deeply concave. Large median preorbital spine present or absent; single large supraorbital spine; coronet oblique, preceded by large median spine; pentagonal ^{summit} of coronet with 5 spines; opercle with radiating striae. Ring 11 + 33 or 34; all with rather long pointed spines at ridges or keels; behind coronet median ridge with 2 strong spines. Shields smooth. Lab filaments may extend at intervals from larger spines.

D. 18 or 19, on 2 trunk and 2 body rings, fin height 4 to $4\frac{2}{3}$ in total head length; A. 4, long as eye; pectoral rays 17 or 18, long as

eye.

Light brown, variably snout and under surfaces paler. Head with very variable dark brown lines, variously curved to reticulating. Whole body often with more or less scattered dark brown dots. Iris gray white. Fins uniformly pale to whitish.

Arabia, Zanzibar, Bourbon, Reunion, India, Andamans, Singapore, East Indies, Philippines, China?, Japan, Queensland, Melanesia, Polynesia.

D. 5139. Jolo Light, S. 51° W.,
3.60 miles (lat. $6^{\circ} 06' N.$, long.
 $121^{\circ} 02' 30'' E.$), vicinity of
Jolo. February 14, 1908. Length
123 mm.

5260. Sandakan Bay, Borneo.
March 21, 1908. Length 104 mm.

Hippocampus erinaceus Günther

Hippocampus erinaceus Günther,
Cat. Fish. Brit. Mus., vol. 8, p. 206,
1870 (no type locality).

Snout less than space between front of orbit and gill opening; supraorbital spine high as orbit; single (parietal) spine before coronet, which rather elevated and ending in 5 spines.

Body rings 11. Breast spines double on each side. All tubercles developed into long, slender, acute spines.

D. 18, on 2 trunk and 2 caudal rings. Length 64 mm. (Günther.)

Locality unknown. Described from an example in the Haslar Collection of the British Museum. The long spines are apparently the principal character.

Epinephelus lutra Nauvage, Hist.
Nat. Madagascar, Poiss., 1891, p. 70, pl.
7, fig. 3.

Serranus lebretonianus Hombron and
Jaquinot, Voy. Astrolabe, Zool., vol. 3,
1853, p. 33, pl. 1, fig. 3. No locality.

Serranus goliath Peters, Arch. Naturg.,
1855, p. 237. Mossimboa, Mozambique.

Serranus microdon Bleeker, Nat. Tijds.
Ned. Indië, vol. 11, 1856, p. 86. Batavia.

Serranus hexagonatus var. merra (part),
Cünther, Cat. Fishes Brit. Mus., vol. 1, 1859,
p. 141.

Epinephelus microdon Bleeker, Atlas Ichth.
Ind. Néerl., vol. 7, 1873-76, p. 57, pl. (3)
281, fig. 3 (Batavia).

Sebastes meleagris Peters, Arch. Naturg.,
1865, p. 392.

Hippocampus spinosissimus Weber

Hippocampus spinosissimus Weber,
Siboga Exped., vol. 57, Fische, p.
~~120, fig. 44~~. 120, fig. 44, 1913 (type
locality, Saphah Straits, 70 meters).

— McCulloch and Whitley, Mem.
Queensland Mus., vol. 8, pt. 2,
p. 138, July 7, 1925 (reference).

— Weber and Beaufort, Fisher Indo
Austral. Archip., vol. 4, p. 109, fig. 45,
1922 (Weber's material type;
Thursday Island).

— McCulloch, Mem. Austral. Mus.,
vol. 5, pt. 1, p. 97, June 29, 1929 (reference).

Hippocampus erinaceus (not
Günther) Weber, Zool. Forsch.
Austral. Seemon, vol. 5, p. 275,
1895 (Thursday Island).

Serranus semipunctatus Valenciennes,

Hist. Nat. Poiss., vol. 2, 1828, p. 341.

Pondicherry. — Günther, Cat. Fishes Brit. Mus., vol. 1, 1859, p. 114 (copied). — Day, Fishes of India, pt. 1, 1875, p. 20 (Pondicherry); Fauna Brit. India, vol. 1, 1889, p. 452.

Serranus crapao Cuvier, Hist. Nat.

Poiss., vol. 3, 1829, p. 494. Batavia. —

Richardson, Ann. Mag. Nat. Hist. London, vol. 9, 1842, p. 25 (Australia). — Günther, Cat. Fishes Brit. Mus., vol. 1, 1859, p. 137 (Port Essington). — Peters, Monatsb. Akad. Wiss. Berlin, 1868, p. 255 (Singapore). —

Alleyne and Macleay, Proc. Linn. Soc. New South Wales, vol. 1, 1876, p. 264 (Long Island in Torres Straits). — Károli, Termész. Füzetek, Budapest, vol. 5, 1882, p. 149 (Singapore).

1519

[1002.] Ulugan Bay, Palawan.
December 1908. Length 190 mm.

1520

Depth $7\frac{1}{2}$; head $4\frac{3}{4}$, width 4.
Snout 2 in head; eye 8, 4 in
snout, greatly exceeds interorbital;
maxillary $1\frac{1}{5}$ in eye; interorbital
 $1\frac{1}{3}$, concave medially. median
preorbital spine large, long;
supraorbital spine single, erect,
equally large; large occipital
erect spine before coronet;
coronet oblique, with crown of
5 spines; rather long median
keel behind coronet followed
by moderate median spine; opercle
with fine though not pronounced radiating striae.
Rings 11 + 35; all with long
pointed spines at ridges or keels.
Shields smooth. Filaments few,
short, may extend from under side
of head and from ends of longer
spines at intervals.

D. 18, on 2 trunk and 2 caudal
rings, base little elevated, fin
height $6\frac{1}{2}$ in head; A. 4, fin 8
in head; pectoral $7\frac{4}{5}$, rays 18.

1521

Brown generally, little paler
on snout. Snout with very many
transverse dark brown parallel
lines or narrow bands, radiate
from eye and few or broken on
under surface of head posteriorly.
~~On~~ head above and body many dark
dots or points, nearly black,
Iris gray, except for dark
radiating lines. Dorsal pale
with submarginal dark line
and greater basal portion speckled
with brown. Pectoral pale.

East Indies, Philippines,
Queensland.

Hippocampus comes Cantor

- Hippocampus comes Cantor, Journ. Asiatic Soc. Bengal, vol. 18¹⁸⁵⁰, p. 1371, pl. 11, fig. 2, 1849 (1850) (type locality, Sea of Pinang).
- Kaup, Cat. Lophobr. Fish Brit. Mus., p. 10, 1856 (Tunior; Sumatra; not Bourbon). — Bleeker, Act. Soc. Sci. Ind. Néerl., vol. 1, no. 3, p. (8) 80, 1856 (Macassar); Verslag. Akad. Wet. Amsterdam, vol. 12, p. 30, 1861 (Singapore). — Day, Proc. Zool. Soc. London, p. 315, 1865 (Cochin, Malabar). — Kner, Reise Novara, Fische, p. 390, 1865 (Java). — Günther, Cat. Fish. Brit. Mus., vol. 8, p. 204, 1870 (type). — Duméril, Hist. Nat. Poiss., vol. 2, p. 512, 1870 (Trinkemali; Cananor, Mouille, Cochin).

Serranus reticularis Günther, Cat. Fishes
Brit. Mus., vol. 1, 1859, p. 150 (copied).

Serranus tumilabrus Valenciennes, Hist.
Nat. Poiss., vol. 2, 1828, p. 346. Seychelles. —

Günther, Cat. Fishes Brit. Mus., vol. 1, 1859,
p. 139 (no locality). — Playfair, Fishes
of Zanzibar, 1866, p. 8, pl. 2, fig. 1 (Uden).

— Thurston, Notes Pearl Fisher. Manaar,
1890, p. 91 (Tuticorin).

Serranus albovittatus Valenciennes, Hist.
Nat. Poiss., vol. 2, 1828, p. 366. Sea of the Indies.

— Günther, Cat. Fishes Brit. Mus., vol. 1, 1859,
p. 129 (Amboyna).

Epinephelus albovittatus Bleeker, Atlas
Ichth., vol. 7, 1873-76, pl. (c) 254, fig. 1.

Serranus bataviensis Bleeker, Verh. Batav.
Genootsch. (Percoid.), vol. 22, 1849, p. 38.

Batavia. — Günther, Cat. Fishes Brit. Mus.,
vol. 1, 1859, p. 129 (Amboyna). — Bleeker,
Atlas Ichth. Ind. Néerl., vol. 7, 1873-76, pl.

— Elera, Cat. Fauna Filipinas, vol. 1,
p. 599, 1895 (Luzon, Cavite, Santa Cruz) ..

— Beaufort, Bijdr. Dierk. Amsterdam, 1913, p. 111 (Saoneh, Waigiu). — Fowler and Bean, Proc. U. S. Nat. Mus., vol. 62, 1922, p. 27 (Zamboanga).

Holocentrus oncus Bloch, Naturges. Ausl. Fische, vol. 4, 1790, p. 69, pl. 234. Japan.

— Walbaum, Arted. Pisc., vol. 3, 1792, p. 644 (on Bloch). — Forster, Fauna Indica, 1795, p. 16.

— Schneider, Syst. Ichth. Bloch, 1801, p. 314 (Java). — Lacépède, Hist. Nat. Poiss., vol. 4, 1802, pp. 338, 380 (Japan).

Serranus oncus Peters, Monatsb. Akad. Wiss. Berlin, 1865, p. 102 (type).

Epinephelus oncus Bleeker, Atlas Ichth. Ind. Néerl., vol. 7, 1873-76, p. 64 (Sumatra, Suizend Islands, Java, Borneo, Celebes, Ambonia).

Serranus reticulatus (Kuhl and Van Hasselt)

Valenciennes, Hist. Nat. Poiss., vol. 2, 1828, p. 323. Java.

1524

Depth 7; head $4\frac{1}{4}$. Snout $2\frac{1}{10}$
in head; eye $6\frac{1}{2}$, 3 in snout;
occipital cres surmounted by 3
spines, behind 5 smaller ones forming
cluster like coronet; opercle (apparently
without keel on figure) with fine
radiating lines.

Rings 11+33. All spines of
salient angles surmounted by
oval or rounded tubercles, ^{rings all appearing hooked back} on
forehead between eyes single spine,
similar one on ^{each} supraorbital,
between smaller pair; single spine
at front and hind end of orbit
and pair little beneath lower
edge; pair each side of throat;
2 at pectoral root.

D. 16, on 2 trunk and 1 caudal
ring; A. 4; pectoral rays 17,
nearly long as eye.

Mystacoleucus marginatus (Valenciennes)

Two, 168 to 204 mm. (caudal fin broken), Ban Thung Luang.

Osteochilus hasseltii (Valenciennes)

No pores on snout. Scales 30 to 34 + 2 or 3; 6 above, 4 below to ventral 4 or 5 below to anal. D. III, 15, I to III, 17, I. Brown above, pale to whitish below. ~~Lower scales of lateral line each with orange blot anteriorly. Each row of scales on back and side wide dark longitudinal band made up of row of dark spots, one on each scale and each preceded by an orange-red blotch. Iris slate. Under surface of head, breast, belly and region about lower surfaces of fins golden. All fins with more or less rosy terminally. Dorsal and hind caudal edges gray. Base~~

1525

Brownish buff. Opercle bluish.
Round orbits few distant brown
dots. Iris silvery white, with
short brownish lines radiating
from pupil. Fins clear. Length
125 mm. (Cantor.)

Malaya, East Indies, India,
Ceylon. Reported by Elera from
the Philippines. Day had an
example 232 mm long. The
species is characterized as shown
in Cantor's figure by its knob
like tubercles on scales and the
^{curved} rings with the spines or tubercles
hooked backward.

spine this subgenus approaches Danio spinosus Day, which has "a sharp spine directed forwards above the anterior superior margin of the orbit, and a second broader and blunter before the centre of the eye on the preorbital." It differs further in its larger scales, barbels and fin rays.

(Ακαρθα spine, with reference to the preorbital + Danio.)

Danio siamensis, new species.

Figure 6.

Depth $2 \frac{2}{3}$ to $2 \frac{3}{4}$; head $3 \frac{2}{3}$ to $3 \frac{3}{4}$, width $1 \frac{9}{10}$ to 2. Snout $3 \frac{1}{2}$ to $3 \frac{4}{5}$ in head from snout tip; eye $3 \frac{1}{8}$ to $3 \frac{3}{5}$, little greater than snout, $1 \frac{2}{5}$ in interorbital; maxillary reaches opposite front of eye, length $2 \frac{1}{3}$ to $2 \frac{3}{5}$ in head from + tip. Front barbel $1 \frac{1}{2}$.

1526

Hippocampus capensis Boulenger

Hippocampus capensis Boulenger,
Marine Investig. South Africa, vol. 1,
p. 11, pl. 3, fig. 2, 1902 (type locality,
Knysna Harbour, Cape Colony).

— Gilchrist, Marine Investig. South
Africa, no. 6, p. 156, 1901 (reference).

— Barnard, Ann. South Afric.

Mus., vol. 21, pt. 1, p. 293, June 1925
(compiled).

Scales 96 to 98 in lateral line to caudal base and 15 to 18 more on latter; tubes 33 to 38 in lateral line to caudal base and 4 or 5 more on latter; 14 to 16 scales above lateral line, 33 to 38 below, 60 to 87 predorsal, 25 to 33 rows across cheek; body scales all with numerous fine basal auxiliary scales; fins all more or less finely scaled basally; maxillary naked or with small patch of scales on expansion above. Scales with 7 to 9 basal radiating striae, 27 to 35 apical denticles, with 5 to 6 transverse series; circuli fine.

D. XI, 15, I or 14, I, third spine $2\frac{9}{10}$ to 3 in total head length, first ray $2\frac{4}{5}$ to 3; A. III, 8, I, second spine $3\frac{1}{8}$ to 4, fourth ray $2\frac{1}{4}$ to $2\frac{1}{3}$; caudal

Snout very short, shorter than postorbital, scarcely twice eye; coronet obsolete.

Rings 10 + 34. Tubercles absent on head and body, short and blunt on tail, 2 at dorsal base.

D. 17, on 2 trunk rings and 1 caudal ring; pectoral?

Brown. Dorsal fin with black submarginal band. Length 90 mm.
(Barnard.)

Knysna, South Africa.

and India. The species are of small or moderate size, the young frequently entering shallow waters as bays, sounds, and lagoons. They differ from Sparus largely in the inclined and protruding incisors which are with more bevelled edges.

Analysis of ~~the~~ species below
a. Diplodus. Black blotch on caudal peduncle.

b. Body usually without narrow transverse dark bands; black saddle on caudal peduncle above; lips rather thin.

c. Body deeper, depth $1\frac{7}{8}$ to $2\frac{1}{4}$.

c.² Body more slender, depth $2\frac{1}{3}$. Sargus.
 e. vi. 13
 noct.

b.² Body with 6 or 7 broad black transverse bands, last as black saddle on caudal peduncle; lips fleshy; depth

1528

Hippocampus mohnikei Bleeker

Hippocampus mohnikei Bleeker,
Verh. Akad. Wet. Amsterdam,
vol. 1, p. 16, fig. 2, 1851 (type
locality, Kaminoseki); Verh.
Batavia. Genoot. (Japan), vol. 25,
p. (21) 55, 1853 (reference). — Günther,

Brit. Mus., vol. 8, p. 206, 1870
(compiled). — Duméril, Hist. Nat.
Poiss., vol. 2, p. 521, 1870 (compiled).
— Ishikawa and Matsuura, Cat.
Fish. Mus. Tokyo, p. 4, 1897 (reference).
— Jordan and Snyder, Annot.
Zool. Japon., vol. 3, p. 58, 1901
(Kaminoseki); Proc. U. S. Nat.
Mus., vol. 24, p. 18, pl. 12, 1901 (1902)
(Enoura). — Franz, Abhandl.

16589. Gulualutan Island.
September 9, 1909. Length 158 mm.

7658. Usada Island, near Jolo.
March 5, 1908. Length 149 mm. [378.]

7150 and 7151. West Coast of Palani
Island, off northern Luzon. November
18, 1908. Length 285 to 337 mm.

5933. Zamboanga market. May 25,
1908. Length 301 mm. [93.]

8920. Mabul Island, Sibuko Bay
vicinity, Borneo. September 29, 1909.
Length 298 mm

A986. Binang Unang Island, Gulf of
Tutomi, Celebes. November 18, 1909.
Length 239 mm.

Kon. Bayer. Akad. Wiss., vol. 4,
Suppl. Band 1, p. 23, 1910
(Aburatsubo). — Snyder, Proc.
U. S. Nat. Mus., vol. 42, p. 408,
1912 (Misaki). — Jordan, Tanaka,
Snyder, Journ. College Sci. Tokyo,
vol. 33, p. 98, fig. 74, 1913 (reference).

Hippocampus morikii Kaup, Cat.
Lophobr. Fish Brit. Mus., p. 8, 1856
(Japan).

Hippocampus mohnikii Bleeker,
Act. Soc. Sci. Ind. Néerl., vol. 3,
no. 3, p. 6, 1857-58 (Japan).

none on tongue; nostrils together,

Howland Island and Tahiti.

Proc.

vol. 8, 1883,

p. 446. New Britain.

Epinephelus diacanthus (non diacanthus)

Jordan and Snyder, Univ. Zool. Japan,
vol. 3, 1901, p. 74 (Nagasaki and

6561 and 6562. Port Moresby, southern

Augon. July 21, 1908. Length 465-5365 mm.
19628. Port Moresby. June 3, 1909. Length 115 mm.
14781. Port Moresby, November 12, 1908. Length 202 mm.

19072 and 19100. Viti Levu Island, northern

hindanus vicinity. August 10, 1909.

Length 168 to 267 mm.
A510. Japanese Island. September 13, 1907. Length 260 mm.
12323. Japanese Island, near Japan

Group. February 21, 1908. Length 217 mm. [271.]
41 and 19182. Johnston Island,
east of Japan. September 9, 1909.

Length 22 to 188 mm.

Hippocampus monchei Günther,
Fishes of Zanzibar, p. 139, 1866
(Aden; Zanzibar).

Lithognathus capensis Swainson, Nat.
Hist. Animals, vol. 2, 1839, p. 222 (on Cuvier pl. 151).
 $\frac{1}{2}$ Pappe, Synop. Edible Fishes Cape, 1853,
p. 20 (Hout Bay).

Depth $2\frac{3}{4}$ to 3; head about 3. Snout pointed, profile straight; eye $3\frac{1}{2}$ to 6, $1\frac{1}{5}$ to $2\frac{1}{2}$ in snout, 1 to 2 in interorbital, greater than to $1\frac{1}{3}$ in preorbital depth; lips thick; preorbital not entirely concealing maxillary, lower edge straight; maxillary reaches below front nostril, hind end truncate, with age swollen and very hard; hind nostril narrow slit. Gill rakers 13 on lower branch of first arch.

Scales with free edge rounded, 43 to 50 in lateral line; 5 above, 14 below; 7 rows on cheek.

D. XI, 10, fourth and fifth spine largest; A. III, 8, second and third spines subequal or second stronger.

Hippocampus brevirostris Schlegel,
Fauna Japonica, Poiss., pt. 15, p.
274, 1850 (type locality, Japan).

— Bleeker, Verh. Batavia. Genoot.
(Japan), vol. 25, p. 21, 1853 (reference).

Hippocampus fasciatus Kaup, Cat.
Lophobr. Fish Brit. Mus., p. 8,
1856 (name in synonymy).

15, lanceolate, equal gill filaments
or $\frac{1}{2}$ of eye; 5 above and 5 below
rudimentary.
Ventrals 9 to 94 in lateral line
to caudal base and 10 to 12?
more on latter; tubes 48 to 52
in lateral line to caudal base
and 2 or 3 more on latter; 15 to
17 scales above lateral line, 27

1124
Cephalopholis sexmaculatus (Rüppell)

Serranus sexmaculatus Rüppell, Atlas
Reise nördl. Afrika, Fische, 1828, p. 107.
Red Sea. — Günther, Cat. Fishes Brit. Mus.,
vol. 1, 1859, p. 118 (copied); Journ. Mus.
Godeffroy, vol. 1, pt. 1, 1873, p. 3, pl. 2
(Red Sea, Indian Ocean, Society Islands,
Tuamotus). — Klunzinger, Verh. zool.
bot. Gesell. Wien, vol. 20, 1870, p. 680
(Koseir, Red Sea); Fische Roth. Meer.

Hippocampus hindoni Jordan and
Snyder, Proc. U. S. Nat. Mus., vol.
24, p. 17, pl. 11, 1901 (1902) (type
locality, Totomi Bay, Japan). —
Jordan, Tanaka, Snyder, Journ.
College Sci. Tokyo, vol. 33, p. 100,
fig. 76, 1913 (reference). — Schmidt,
Trans. Pac. Comm. Acad. Sci. U. S.
N. R., vol. 2, p. 34, 1931 (Misaki).

Serranus bontoo Valenciennes, Hist. Nat. Poiss., vol. 2, 1828, p. 334, Vizagapatam (on Madinawa bontoo Russell, Fishes of Coromandel, vol. 2, 1803, p. 22, pl. 128, Vizagapatam and Madras). — Cantor, Cat. Malayan Fishes, 1850, p. 11 (Pinang Sea). — Günther, Cat. Fishes Brit. Mus., vol. 1, 1859, p. 138 (Ceylon). — Day, Fishes of Malabar, 1867, p. 3. — Károli, Termesz. Füzetek, Budapest, vol. 5, 1882, p. 149 (Ceylon).

Serranus suillus Valenciennes, Hist. Nat. Poiss., vol. 2, 1828, p. 335, Coromandel. — Günther, Cat. Fishes Brit. Mus., vol. 1, 1859, p. 129 (Philippines). — Playfair, Fishes of Zanzibar, 1867, p. 5 (Zanzibar). — Meyer, Ann. Soc. Espan. Hist. Nat. Madrid, vol. 14, 1885, p. 9 (north Celebes). — Elera,

Cat. Fauna Filip., vol. 1, 1895, p. 461 (Cebu). — Goryoga, Imp. Soc. Españ. Hist. Nat. Madrid, vol. 17, 1888, p. 282 (Cebu).

1533

Depth $8\frac{2}{3}$; head $5\frac{7}{8}$. Snout $2\frac{3}{5}$ in head from snout tip; eye 5, 2 in snout; coronet high, nearly high as snout length, laterally compressed to middle, ends anteriorly in acute triangular spine with filament, posterior terminal spine without filament; coronet also longitudinally compressed ^{at} terminal half with lateral fan like expansion with 5 spines directed upward, 1 next each end with filament; supraorbital spines very prominent, with filaments and minor spine in front all pointing anteriorly; well marked median preocular spine.

Rings 10 + 37; tubercles rather high, on first, fourth, seventh and tenth trunk rings, and sixth, eighth, tenth and thirteenth caudal rings enlarged and with

Cuv¹²⁹ Pagellus lithognathus Cuvier

Pagellus lithognathus Cuvier, Hist. Nat. Poiss., vol. 6, 1831, p. 204, pl. 151. Cape of Good Hope.

$\frac{1}{m}$ Günther, Cat. Fishes Brit. Mus., vol. 1, 1859, p. 483 (Cape of Good Hope). $\frac{1}{m}$ Castelnau, mém. Poiss. Afrique Australe, 1861, p. 26

(Simon's Bay, Algoa Bay, Port Natal). $\frac{1}{2}$

$\frac{1}{m}$ Schultze, Abhand. Deutsch. Seefisch. Ver. Berlin, vol. 9, 1907, p. 9, pl. 1 (on

Cuvier). $\frac{1}{m}$ Gilchrist and Thompson, Ann. South African Mus., vol. 6, 1908-10, p. 233

(Natal); Marine Biolog. Rep. South Africa, vol. 2, 1914, p. 99 (habits); Ann. Durban Mus., vol. 1, pt. 4, 1917, p. 363 (references).

$\frac{1}{m}$ Thompson, Marine Biolog. Rep. South Africa, vol. 4, 1908, p. 90 (References). $\frac{1}{m}$

Barnard, Ann. South African Mus., vol. 21, pt. 2, 1927, p. 705 (coast of South west Africa, Table Bay, False Bay, Agulhas Banks, Natal).

filaments.

D. 15, on 2 trunk and 1 caudal rings; A. 4; pectoral rays 14, fin 5 in total head length.

Greenish gray, with irregular darker markings on body and tail. Head mottled with dark gray on greenish ground, interspersed with light cross bars and streaks. Middle line of belly black. Fins dusky, unmarked except dorsal, which with dark longitudinal band. Egg pouch on 7 caudal rings, with prickles over surface, greenish.

Africa.

53082 A.N.S.P. Delagoa Bay,
Portuguese East Africa. H. W. Bell
Marley. ^{1923.} Length 135 mm.

53033 A.N.S.P. Natal coast, Tugela
River mouth in 60 fathoms. H. W. Bell
Marley. Length 188 mm.

53106 A.N.S.P. Natal coast. H. W.
Bell Marley. 1925. Length 140 mm.

1 U. S. N. M., No. 47930.

Gotomi Bay, off Hamamatsu,
Japan. Albatross Collection.
Length 38 mm. Type of
Hippocampus sindensis.

lanceolate.

~~Scales~~ 56 or 57 in lateral line to caudal base, with 5 more on latter; 4 to 7 above, 14 or 15 below, 26 to 30 predorsal; 5 or 6 between eye to preopercle flange; muzzle, preopercle flange, front half of interorbital and superciliaries naked. Scales with 7 to 10 basal radiating striae; 6 to 10 3 apical denticles, with 2 transverse rows of basal segments; circuli fine.

D. XIII, 10, I, fourth spine $2\frac{2}{5}$ to 3 in head, first ray $3\frac{1}{3}$ to $3\frac{4}{5}$; A. III, 10, I, second spine 4 to $4\frac{1}{4}$, first ray $3\frac{1}{2}$ to 4; caudal $1\frac{1}{6}$ to $1\frac{1}{4}$, forked; least depth of caudal peduncle $3\frac{1}{2}$; pectoral 1 to $1\frac{1}{10}$; ventral $1\frac{2}{5}$ to $1\frac{3}{5}$.

Pinkish, belly silvery.

Madagascar, Delagoa Bay, Natal, South

Hippocampus longirostris (Cuvier).

Syngnathus longirostris Cuvier,

Règne Animal, vol. 2, p. 363, 1829

(on Hippocampus non aculeatus

Willoughby, Historia Piscium, p.

25, ^{pl. 1,} fig. 4, 1686 (type locality, not given).

Hippocampus longirostris Schlegel,
Fauna Japonica, Poiss., pt. 15, p.
273, 1850 (Seas of Japan). — Bleeker,
Verh. Batavia. Genoot. (Japan),
vol. 25, p. 21, 1853 (reference). —
Günther, Cat. Fish. Brit. Mus.,
vol. 8, p. 201, 1870 (China Seas; Formosa).
— Elera, Cat. Fauna Filipinas, vol.
1, p. 598, 1895 (Samar; Borongan).
— Jordan and Snyder, Annot. Zool.
Japon., vol. 3, p. 58, 1901 (reference).
— Fowler and Bean, Proc. U. S. Nat.
Mus., vol. 62, p. 11, fig. 2, 1922 (Cebu).

Depth $2\frac{4}{5}$ to $3\frac{1}{2}$; head $2\frac{1}{3}$ to $2\frac{2}{5}$, width $2\frac{1}{8}$ to $2\frac{2}{5}$. Snout $4\frac{1}{8}$ to $5\frac{1}{3}$ in head from snout tip; eye $4\frac{1}{8}$ to $5\frac{2}{3}$, slightly greater than snout in young and subequal with age, greater than interorbital at all ages; maxillary reaches opposite hind eye edge in young, little beyond with age, expansion $1\frac{2}{5}$ to 2 in eye, length $2\frac{1}{10}$ to $2\frac{1}{5}$ in head from snout tip; teeth fine, conic, in bands in jaws; pair of
Cebu. March 16, 1909. Length 207 mm.

7611, 15897, 16394. Mansalay, Minotero Island. June 4, 1908. Length 174 to 185 mm.

12141 and 21515. Masamat Bay, Quinalasag Island. June 12, 1909. Length 155 to 192 mm.

Depth $9\frac{1}{4}$; head $4\frac{3}{4}$, width $4\frac{1}{3}$.

Snout 2 in head; eye 8, 4 in snout, greatly exceeds interorbital; maxillary equals eye; interorbital $1\frac{3}{4}$ in eye. Rather large oblique median single preorbital spine; single erect similar supraocular (only on right side preceded by very small additional spine); ^{brad} conic protuberance at occiput ^{before} lower, short coronet, which forms cluster of 5 spines - of which last 3 form second row, much larger and nearly horizontal; ~~occipital~~ ~~beel low~~ opercle with rather smooth radiating venules.

Rings $10 + 35$; ridges all with tubercles at articulations, not conspicuous; shields smooth; no filaments. Behind coronets, median beel with 2 tubercles, low, inconspicuous.

1539

D. 18, on 2 trunk and 2 caudal rings, base little elevated, fin height $6\frac{2}{3}$ in total head; A. 4, length $8\frac{3}{5}$ ^{in total head}; pectoral $9\frac{1}{2}$, rays 17 or 18.

Dark bone brown, largely uniform. Lower surface of head and tail cinnamon buff. Many close set darker brown bands radiate from iris over surrounding are of head, broken by pale reticulating lines on opercle to form dark blotches. Iris gray. Dorsal pale, with submarginal dark brown band and another lighter subbasally. Anal and pectoral pale.

Philippines, China, Formosa, Japan.

U. S. N. M., No. 84222. Cebu.
Dr. F. Baker. Length 140 mm.

1540

Hippocampus borboniensis Duméril

Hippocampus borboniensis Duméril,
Hist. nat. Poiss., vol. 2, p. 520, 1870
(type locality, Réunion). — Sauvage,
Hist. nat. Madagascar, Poiss., p.
504, pl. 50, fig. 2, 1891 (Réunion).

Hippocampus comes ^{not Cantor} (~~Fart~~) Kaup,
Cat. Lophobr. Fish Brit. Mus., p. 10,
1856 (Bourbon Island material).

$1\frac{3}{4}$ to 2, convex behind; least depth of caudal peduncle $3\frac{2}{3}$ to $3\frac{3}{4}$; pectoral $1\frac{3}{5}$ to $1\frac{3}{4}$; ventral 2 to $2\frac{2}{5}$.

Body brown, marked with numerous small, grayish white spots, rounded and on head, back, sides and tail usually formed as slightly undulated and often slightly inclined series of pale streaks, very variable. Often large pale blotches present. All vertical fins and ventral basally, often pectoral less conspicuously, finely spotted with gray white; especially contrasted on soft vertical fins, which darker or dusky subterminally and with narrow whitish edges. Iris yellowish. Dusky or blackish streak in groove of maxillary.

Depth $8\frac{2}{3}$; head $4\frac{2}{3}$. Snout $1\frac{4}{5}$
 in head, ^{from snout tip} longer than postocular;
 eye $5\frac{1}{2}$ in head, 3 in snout;
 occipital coronet prominent, of
 5 tubercles, preceded by low
 keel and short frontal spine.

Body rings 10. Spines of
 head and pectoral rings
 obtuse.

D. 16, on 2 trunk rings and 1
 caudal ring; anal 4 (wrongly
 14 by Sauvage); pectoral 15.

Greenish brown, with
 yellowish points and marblings.
 Interrupted brown lines on
 head. Length 130 mm.

(Sauvage.)
 Madagascar, Reunion.

2 to 2 $\frac{1}{3}$.trifasciatus.

a.² Rhabdosargus new subgenus. no black blotch on caudal peduncle; each side of belly above ventrals narrow golden longitudinal band; depth 2 $\frac{3}{8}$.

auriventris.Caudal 120
C. operculi 1/2Caudal 3
2 more only

Subgenus Diplodus Rafinesque
Caudal peduncle with black saddle like blotch above.

Caudal 129

Diplodus sargus (Linnaeus)

Sparus sargus Linnaeus, Syst. Nat.,
ed. 10, vol. 1, 1758, p. 278. Mediterranean.

Sargus rondeletii Valenciennes, Hist. Nat.
Pois., vol. 6, 1830, p. 14, pl. 141. Naples,
Marseille, Toulouse, Malta, Alexandria,
lac de Bisertt. — Castelnau, Mém.

Pois. Afrique Australe, 1861, p. 18
(Cape to Algoa Bay, Gamtoos River).

1542

Hippocampus camelopardalis Bianconi

Hippocampus camelopardalis Bianconi,
Nov. Comm. Inst. Sci. Bonon., p. 145,
pl. 1, fig. 3, 1855 (type locality,
Mossambique). — Günther, Cat.
Fish. Brit. Mus., vol. 8, p. 205, 1870
(type of Hippocampus subcoronatus).
— Duméril, Hist. Nat. Poiss., vol. 2,
p. 506, 1870 (compiled). — Peters,
Monatsb. Akad. Wiss. Berlin, p. 447,
1876 (Mauritius); Trans. Roy. Soc.
Arts Sci. Mauritius, new ser., vol.
11, p. 58, 1883 (Mauritius). —
Barnard, Ann. South Afric. Mus.,
vol. 21, pt. 1, p. 294, June 1925
(compiled).

Depth $2\frac{1}{2}$ to $3\frac{1}{2}$; head $2\frac{2}{5}$ to $2\frac{1}{2}$, width $2\frac{1}{5}$ to $2\frac{2}{5}$. Snout $3\frac{4}{5}$ to 5 in head from snout tip; eye $4\frac{1}{4}$ to $5\frac{1}{10}$, 1 to $1\frac{1}{10}$ in snout, greater than interorbital; maxillary reaches opposite hind eye edge, expansion $1\frac{1}{3}$ to $1\frac{3}{4}$ in eye, length $2\frac{1}{8}$ to $2\frac{1}{4}$ in head from snout tip; teeth in rather broad bands, mandibulars in 5 rows anteriorly, narrowing to 3 and finally 2 rows; pair of canines in front of each jaw, often double; moderate bands of fine teeth on vomer and palatines; interorbital 7 to $9\frac{1}{5}$, nearly level; hind preopercle edge with very minute serrae; opercular spines 3, median nearer lower. Gill rakers $9+15$, rather clavate, little less than gill filaments or $\frac{1}{3}$ of eye; 8 above and 5 below rudimentary.

1543

Hippocampus comes (not Cantor) Peters,

~~Archiv~~ Archiv naturges., 1855, pt. 1, p.
277 (Inhambane); Monatsb. Akad. Wiss.
Berlin, p. 276, 1868 (Java).

Hippocampus subcoronatus Günther,
Fishes of Zanzibar, p. 139, pl. 20, fig.
4, 1866 (type locality, Zanzibar; Mozambique).
— Peters, Monatsb. Akad. Wiss.
Berlin, p. 276, 1868 ~~and Peters~~

(4) 282, fig. 2. — Meyer, Ann. Soc. Españ.
Hist. Nat. Madrid, vol. 16, 1885, p. 9
 (Mamao, Celebes).

Serranus polystigma Bleeker, Nat. Tijds.
Ned. Indie, vol. 4, 1853, p. 244. Benculen,
 Sumatra. — Günther, Cat. Fishes Brit. Mus.,
 vol. 1, 1859, p. 129 (copied).

Epinephelus polystigma Bleeker, Atlas Ichth.
Ind. Néerl., vol. 7, 1873-76, pl. (7) 285,
 fig. 4.

? Serranus flavoguttatus Peters, Arch.
Naturg., 1855, p. 235. Mozambique.

Epinephelus caeruleopunctatus (part)
Bleeker, Atlas Ichth. Ind. Néerl., vol. 7,
 1876, p. 62.

1544

Depth 6; head 5. Snout 2 in head; eye $4\frac{1}{4}$, 2 in snout; orbital and occipital spines well developed, simple; occipital crest subtriangular, not quite high as snout, ends in subpentagonal knob.

Rings 11 + 36, first, fourth and seventh with spinous prominences rather stronger than others. Alternate caudal rings with spines more prominent.

D. 18, - on 2 trunk and 2 caudal rings, 3 basal tubercles each side; pectoral $\frac{4}{5}$ of eye.

Brown, head variegated with yellowish. Length 100 mm. (Günther).

East Africa, Mozambique.

1545

Hippocampus elongatus Castelnau

Hippocampus elongatus Castelnau,
Proc. Zool. Acclimat. Soc. Victoria,
vol. 2, p. 144, 1873 (type locality,
Fremantle, Western Australia).
— McCulloch, Mem. Austral Mus.,
vol. 5, pt. 1, p. 96, June 29, 1929
(reference).

Proc. U. S. Nat. Mus., vol. 62, 1922, p. 28
(Cebu). — Barnard, Ann. South Afric.
Mus., vol. 21, 1927, p. 485 (Natal coast,
Delagoa Bay).

Serranus horridus (Kuhl and Van Hasselt)
Valenciennes, Hist. Nat. Poiss., vol. 2, 1828,
p. 321. Java. — Fowler, Proc. Acad.
Nat. Sci. Phila., 1907, p. 257 (Padang
material).

Epinephelus horridus Fowler, Journ.
Acad. Nat. Sci. Phila., ser. 2, vol. 12,
1904, p. 524 (Padang).

Serranus taeniocheirus Valenciennes, Hist.
Nat. Poiss., vol. 6, 1830, p. 518. No locality
(on Gaimard).

Serranus lutra Valenciennes, Hist. Nat.
Poiss., vol. 8, 1831, p. 474. Mauritius. —

Günther, Cat. Fishes Brit. Mus., vol. 1,
1859, p. 126 (copied).

Body elongate. Snout 2 in head; short thin ridge before eyes; supraorbital spine conical, rather long, sharp, pointed; single conical, rather notched spine before coronet, with terminal 5 points well marked.

Body rings 11, broadest not $\frac{1}{5}$ wider than first 2, tubercles moderately acute, no tentacles.

D. 18, on 3 trunk rings, base little elevated.

Light greyish yellow, with more obscure brown, irregular, marbled spots. Length 75 mm.

(Castelnau.)

Western Australia.

703

Cuv 130
Genus Diplodus Rafinesque

Diplodus Rafinesque, Ind. Itt. Sicil.,
1810, pp. 26, 54. Type Sparus annularis
Linnaeus, monotypic.

Sargus Klein, Gesell. Schauplatz,
Vol. 1, 1775, p. 966. Type Sparus
sargus Linnaeus, tautotypic.
(Inadmissible.)

Sargus (not Fabricius 1798) Cuvier,
Règne Animal, vol. 2, 1817, p. 272.

Type Sparus sargus Linnaeus, tautotypic.

Genius Gistel, Naturgesch. Thier.,
1848, p. 237. Type Sparus sargus
Linnaeus, virtually. Genius Gistel
proposed to replace Sargus Cuvier.

Body ovoid, moderately long, compressed,
with back arched or elevated. Head
moderate, rather deep. Eye moderate.
Mouth terminal, small, low. One
row of broad anterior inclined

1547

Hippocampus subelongatus Castelnau

Hippocampus subelongatus Castelnau,
Proc. Zool. Acclimat. Soc. Victoria,
vol. 2, p. 145, ^{May 10} 1873 (type locality,
Fremantle, Western Australia).

— Macleay, Proc. Linn. Soc. New
South Wales, vol. 6, ^{pt. 2} p. 306, 1882
(copied). — McCulloch, Mem.
Austral. Mus., vol. 5, pt. 1, p. 96,
June 29, 1929 (reference).

Epinephelus polydorphilus Bleeker,
Atlas Ichth. Ind. Néerl., vol. 7, 1873-76,
p. 59, pl. (5) 283, fig. 1 (Java, Singapore,
Banka, Celebes, Ambona).

Serranus fasseni Bleeker, Nat. Tijds.
Ind. Indie, vol. 13, 1857, p. 376. Vangi
Island.

Epinephelus fasseni Bleeker, Atlas
Ichth. Ind. Néerl., vol. 7, 1873-76, p. 51,
pl. (11) 289, fig. 5 (Vangi Island).

Serranus diacanthus (part) Günther,
Cat. Fishes Brit. Mus., vol. 1, 1859, p. 110.

Serranus gilberti (non Richardson)
Bleeker, Atlas Ichth. Ind. Néerl., vol.
7, 1873-76, p. 56; vol. 8, 1876-77, pl. (53)
331, fig. 3.

Serranus multinotatus Peters, Monatsb.
Akad. Wiss. Berlin, 1876, p. 435. mauritius.

Epinephelus multinotatus Boulenger, Cat.
Fishes Brit. Mus., vol. 1, 1895, p. 246 (copied).

Body rather elongate, greatest width not over $\frac{1}{3}$ thicker than least width. Snout longer than rest of head; short, thin, rather rounded ridge before eyes; supraorbital spine broad, arched, rather notched; single, short, blunt, notched spine before coronet, rather elevated, directed very obliquely, ending in 5 well marked blunt spines.

Body rings 11.

D. 18, on 3 trunk rings.

Yellow, with transverse brown narrow bands on snout. Length 112 mm. (Castelnau.)

Western Australia.

Closely related to Danio
malabaricus (Gerdon), but that
species without the preorbital
spine. Day describes "three or four
blue bands along the sides, the
caudal ones coalescing so as to
form a broad bluish band along
the middle of the caudal fin." My
specimens of the present species
are a little different from the
figure of Danio malabaricus of Day,
in which all three lower dark
bands coalesce. Moreover the dark
median band of my species does
not extend continuously on the
caudal. Another feature is its
upturned head. Most figures
of Danio malabaricus, as given in
publications on aquaria, show the
dark bands broken by pale vertical
variable bars, a condition not seen
in my species.

(For Siam.)

1549

Hippocampus whitei Bleeker

Hippocampus whitei Bleeker, Verh.
Kon. Akad. Wet. Amsterdam, vol. 2,
p. 17, sp. 311, 1855 on Sea horse
White, Voy. New South Wales, p.
fig., 1790, type locality, New
South Wales). — Whitley, Austral.
Zool., vol. 6, pt. 4, p. 313, February
13, 1931 (note).

Syngnathus hippocampus (not
Linnaeus) Shaw, Voyage New South
Wales, White, p. 215, pl. 1, fig. 2,
1790).

to preopercle ridge; muzzle and maxillary naked; row of rather large scales from basal sheaths to dorsals and anals, and caudal base broadly scale. Lateral line of simple tubes, upper section high along ~~midline~~^{bases} of dorsals on back and lower section midway on side of caudal peduncle. Scales with 7 basal radiating striae; about 40 small apical denticles with 7 series transversely, circuli very fine.

D. XI, 9, I, ~~anals~~^{last} spine $1\frac{3}{5}$ in total head, seventh ray $2\frac{1}{5}$ in combined head and body to caudal base; A. III, 9, I, seventh ray $2\frac{1}{5}$; caudal $1\frac{1}{5}$, elongate, ovoid in contour; ventral $1\frac{1}{2}$; third anal spine $2\frac{3}{5}$ in total head length; least depth of caudal peduncle $2\frac{1}{8}$; pectoral $1\frac{1}{8}$.

Hippocampus novae-hollandiae

- Steindachner, Sitzs. Ber. Akad. Wiss. Wien, math.-naturw. Kl., vol. 53, pt. 1, p. 474, pl. 1, figs. 2 a-b, 1866 (type locality, Port Jackson).
— Günther, Cat. Fish. Brit. Mus., vol. 8, p. 201, 1870 (Sydney; South Australia). — Duméril, Hist. nat. Poiss., vol. 2, p. 517, 1870 (Sydney).
— Castelnau, Proc. Zool. Acclimat. Soc. Victoria, vol. 1, p. 197, 1872 (Victoria); Proc. Linn. Soc. New South Wales, vol. 3, p. 356, 1878 (New Port Jackson). — Macleay, Proc. Linn. Soc. New South Wales, vol. 6, ^{pt. 1}, p. 305, 1882 (Port Jackson; Port Phillip). — Duncker, Fauna Indu. Austral. Michaelson and Hartmeyer, vol. 2, p. 248, 1909.
— White and Hale, Rec. South

Calloplectops argus new species.

~~Form. No. of type?~~

Depth $2\frac{1}{3}$; head $2\frac{3}{4}$, width 2.

Snout $4\frac{1}{2}$ in head from snout tip; eye 3, much greater than snout or interorbital; maxillary reaches $\frac{3}{5}$ in eye, expansion 2 in eye, length $2\frac{1}{8}$ in head from snout tip; teeth villiform, in bands in jaws, on vomer and few on front of each palatine, tongue smooth; interorbital 4 in head from snout tip, slightly convex. Gill rakers $2+9$, lanceolate, greatly longer than gill filaments or $3\frac{1}{5}$ in eye; 2 upper and lower rudiments.

Scales $18+7+2$ in lateral lines, with last on caudal base; 5 scales above lateral line, 11 below, 11 predorsal forward nearly midway in interorbital, 2 rows on cheeks

Austral. Mus., vol. 1, no. 4, p. 320,
fig. 55, January 27, 1921 (Spencer
Gulf). — Waite, Rec. South
Austral. Mus., vol. 2, no. 1, p. 62,
fig. 93, April 23, 1921 (reference).
— McCulloch, Mem. Austral.
Mus., vol. 5, pt. 1, p. 96, June 29, 1929
(reference).

15642. Tablayan, Mindoro. December 13, 1908. Length 89 mm.

13946 and 13947. Sabtan Island. November 8, 1908. Length 112 to 135 mm.

17599. San Miguel Island, Tabaco Bay. June 7, 1909. Length 160 mm.

8692. Tuta Bay, Zolo. September 19, 1909. Length 106 mm.

21358. Linibe Strait, Celebes, Dutch East Indies. November 11, 1909. Length 117 mm.

14395. Talise Island. November 9, 1909. Length 115 mm.

13058. Gomomo Island, Pitt Passage. December 3, 1909. Length 143 mm.

(niveus, snowy, with reference to the white spots.)

Head $5\frac{1}{3}$, $1\frac{1}{5}$ in trunk; trunk $4\frac{1}{3}$ in total. Snout 2 in head; eye 7, $3\frac{1}{2}$ in snout; supraorbital ridges converge to form slight elevation before eyes, each ends posteriorly in low blunt spine over hinder edge of eye; interorbital $\frac{1}{2}$ of eye; 1 or 2 low protuberances on front profile of compressed occiput; coronet with 5 or 6 blunt points; opercle with faintly raised lines radiating from knob behind eye, blunt spine on upper angle and 3 others on hind edge; nuchal crest high.

Rings 11 + 34 to 36, edges of each ridged, produced as blunt spines or protuberances at intersections; every third or fourth spine on dorsal profile more

One floundered out on land afoot from the water's edge, though soon wriggled back. All swim rather slow.

Schilbeodes insignis (Richardson).

Sinnamahonung, Portage Creek, September 13, 1926, six examples 68 to 95 mm.; North Creek, September 13, 1926, one 97 mm.

Cyprinidae.

Campostoma anomalum (Rafinesque).

Lillibridge Creek, one 178 mm. long June 2, 1925 in full spawning; one 85 mm. long June 17, 1926; four 61 to 80 mm.; cove at Port Allegany, one example 99 mm. July 30, 1926; Genesee River, six examples 50 to 89 mm. July 27, 1926. The Genesee examples were very much darker than those from the Allegheny.

"Plump little minnows in the ripples April 29, 1926, were a bright golden color, about 50mm. long. " (G.)

Chrosomus erythrogaster Rafinesque.

One from cove near Port Allegany, September 15, 1926, 45 mm. long.

pronounced, with age very obtuse,
 upper body ridge ends below
 end of dorsal fin; upper
 caudal ridge begins on ninth
 or tenth body scute; median
 lateral trunk ridge continuous
 with lower caudal ridge, and
 with ventral trunk ridge end
 at vent.

D. 16 or 17, on 2 or 3 trunk
 rings and 1 caudal ring; A. 4;
 pectoral rays 15 or 16. Brood
 pouch on 1 trunk and 4 caudal
 rings.

Uniform. Length not given.
 (Waite and Hale.)

South Australia, Victoria,
 New South Wales.

FISHES FROM MCKEAN, POTTER AND CAMERON COUNTIES, PENNSYLVANIA

By Henry W. Fowler and C. Gordon Selson

1554

Hippocampus kuda Bleeker

Hippocampus kuda Bleeker, Nat.
Tijds. Ned. Indië, vol. 3, p. (54)
82, 1852 (type locality, Singapore);
Verh. Batavia. Genoot. (Trosk.),
vol. 25, p. 26, 1853 (Amboina, Banda,
Ceram, Banka, Singapore); Nat.
Tijds. Ned. Indië, vol. 6, p. 90, 1854
(Banda, Heira), p. 204 (Timor,
Kupang), p. 458 (Amboina); vol.
7, p. 228, 1854 (Manado, Celebes);
vol. 9, p. 259, 1855 (Siboga), p. 284
(Amoerang, Celebes); vol. 10, p. 348,
1856 (Rio, Bintang); vol. 11, p. 253
(Laboeha, Batjan), p. 386 (Kajeli,
Buru); vol. 12, p. 194, 1856 (Ternate);
vol. 13, p. 389, 1857 (Timor, Koepang);
vol. 16, p. 30, 1858 (Amboina), p. 37
(Tjilatjap); vol. 18, p. 361, 1859

4841. Jolo market. February 12, 1908. Length 267 mm.

22374. Maculabo Island, east coast of Luzon. June 14, 1909. Length 87 mm. [1662].

16914. Makesi Island, Palawan. April 5, 1909. Length 131 mm.

8600. Matnog Bay, east coast of Luzon. May 31, 1909. Length 390 mm.

6266. Medio Island, Galera Bay, Mindoro. June 9, 1908. Length 285 mm.

8060. Mompong Island, Anabuyan Islands. March 5, 1909. Length 390 mm.

9031 and 9032. Habatas Point, Samar Island. July 24, 1909. Length 294 to 380 mm.

5283. Romblon Harbor. March 25, 1908. Length 172 mm.

7313. Sablayan Bay, Mindoro Island. December 12, 1908. Length 427 mm.

21912. Sirinao Island, reef, Saboda Bay, Palawan Island. December 31, 1908. Length 184 mm.

(Blingie, Banka); vol. 20, p. 88,
 1859-60 (Bintang), p. 198 (Priaman);
 vol. 22, p. 110, 1860 (Buru); Act.
 Soc. Sci. Ind. Néerl., vol. 1, no. 5, p.
 8, 1856 (Amboina); vol. 2, no. 7, p. 9,
 1857 (Amboina); vol. 3, no. 4, p.
 5, 1857-58 (Manado); vol. 3, no. 9,
 p. 5, 1857-58 (Priaman); vol. 8,
 (Sumatra) p. 14, 1859 (Priaman);
 Versl. Akad. Wet. Amsterdam, vol.
 14, p. 97, 1862 (Ternate); Ned.
 Tijds. Dierk., vol. 1, p. 240, 1863
 (Obi); Arch. Néerl. Sci. Nat., vol.
 2, p. 397, 1867 (Halmahera); Versl.

— Schmeltz, Cat. Mus. Godeffroy, no.
 ↓ 4, p. 28, 1869 (Samoa).

→ — Snyder, 11 vol. nat. ...

2, p. 506, 1870 (compiled). — Jordan

— Bleeker, Arch. Néerl. Sci. Nat.,
 Harlem, vol. 13, p. 37, 1878 (New
 Guinea).

(Blinju, Banka); vol. 20, p. 88,
1859-60 (Bintang), p. 198 (Priaman);
vol. 22, p. 110, 1860 (Buru); Act.
Soc. Sci. Ind. Néerl., vol. 1, no. 5, p.
8, 1856 (Amboina); vol. 2, no. 7, p. 9,
1857 (Amboina); vol. 3, no. 4, p.
5, 1857-58 (Manado); vol. 3, no. 9,
p. 5, 1857-58 (Priaman); vol. 8,
(Sumatra) p. 14, 1859 (Priaman);
Versl. Akad. Wet. Amsterdam, vol.
14, p. 97, 1862 (Ternate); Ned.
Tijds. Dierk., vol. 1, p. 240, 1863
(Obi); Arch. Néerl. Sci. Nat., vol.
2, p. 397, 1867 (Halmahera); Versl.
Akad. Wet. Amsterdam, ser. 2,
vol. 2, p. 290, 1868 (Rio, Bintang).
— Duméril, Hist. Nat. Poiss., vol.
2, p. 506, 1870 (compiled). — Jordan
and Snyder, Annot. Zool. Japon.,
vol. 3, p. 59, 1901 (reference); Proc.

8801. Butuanan Island, east coast of Luzon. June 12, 1909. Length 317 mm.

17178. Butuanan Island. June 13, 1909. Length 232 mm.

5368, ~~and 5430~~. Cebu market, Cebu. April 5, 1908. Length 222 mm.

5430. Cebu market. April 7, 1908. Length 237 mm.

A 1529. Doc Can Island, Sulu Sea. January 7, 1910. Length 367 mm.

7531, 7533, 7587. Endeavor Strait, Palawan Island. December 23, 1908. Length 273 to 387 mm.

21588. Guinayan Island, east coast of Luzon. June 4, 1909. Length 150 mm.

A 474. Isabel, Basilan Island, south of Zamboanga. September 11, 1909. Length 287 mm.

1556
U. S. Nat. Mus., vol. 24, p. 15, 1901
(1902) (Ishigaki). — Jordan and
Seale, Bull. Bur. Fisher., vol. 25,
p. 215, 1905 (1906) (reference); Proc.
U. S. Nat. Mus., vol. 28, p. , 1905
(Negros); Bull. Bur. Fisher., vol.
26, p. 10, 1906 (Cavite). — Seale and
Bean, Proc. U. S. Nat. Mus., vol. 33,
p. 240, 1907 (Zamboanga). — Jordan
and Richardson, Bull. Bur. Fisher.,
vol. 27, p. 246, 1908 (Mindoro). —
Franz, Abhandl. Bayer. Akad. Wiss.,
vol. 4, Suppl. Band 1, p. 23, 1910
(Oyushi). — Seale, Philippine Journ.
Sci., vol. 5, no. 4, p. 269, October 1910
(Sandakan). — Weber, Siboga
Exped., vol. 57, Fische, p. 119, 1913
(Flores, Manado, Gisser, Ambona,
Tual, Great Kei, Timor). — Fowler,
Proc. Acad. Nat. Sci. Philadelphia,

surface of the head and body.
According to Boulenger reaches
100 mm. Our materials seem to
show two fairly constant variations
of color. In the first the throat is
with cross bars, the dark blotch on
the caudal peduncle small and
the spots on the body relatively small.
The second variation is without
cross bars, spot on caudal peduncle
very large and spots on body large
and hexagonal. As evidences of
intergradation occur we have not
attempted to list this material
according to color variations.

8079. Burias Island. March 5,
1909. Length 541 mm.

5670. Busin Harbor, Burias Island.
April 23, 1908. Length 246 mm.

p. 446, 1921 (type of Hippocampus
taeniops). — Weber and Beaufort,
Fishes Indo Austral. Archip., vol.
 4, p. 110, 1922 (Pulu Weh; Nias; Pulu Kaka;
 Simalur; Telok Betong, Sumatra; Batavia; Balikpapan;
 Menado; Flores; Samau; Ambau; Banda; Buru; Ceram; Gisser;
 Kei; Biak; New Guinea).
 — Fowler and Bean, Proc. U. S. Nat.
Mus., vol. 62, p. 11, 1922 (Takao,
 Formosa). — Fowler, Bull. Bishop
Mus., no. 22, p. 25, 1925 (Honolulu).

↑ — Barnard, Ann. South Afric. Mus., vol.
 21, pt. 1, p. 293, pl. 11, fig. 2, June 1925
 (Katal, Delagoa Bay, N. Zambique).

Zool. Mus. Hamburg, vol. 41, p. 18,
 1925 (Kewieng Kusa, New Mecklenburg;
 Linden Harbor, New Pomerania;
 Friedrich Wilhelm Harbor and
 Dörperspitze, New Guinea). — Fowler,
Bull. Bishop Mus., no. 38, p. 8, 1927
 (Honolulu); New. Bishop Mus.,

p. 446, 1921 (type of Hippocampus
taeniops). — Weber and Beaufort,
Fishes Indo Austral. Archip., vol.

4, p. 110, 1922 (Pulu Weh; Nias; Pulu Hako;
Simalur; Telok Betang, Sumatra; Batavia; Balikpapan;
Menado; Flores; Samau; Ambau; Banda; Buru; Ceram; Giser;
Kei; Biak; New Guinea).

— Fowler and Bean, Proc. U. S. Nat.
Mus., vol. 62, p. 11, 1922 (Takaio,
Formosa). — Fowler, Bull. Bishop

Mus., no. 22, p. 25, 1925 (Honolulu).

— Fowler and Ball, Bull. Bishop

Mus., no. 26, p. 16, 1925 (Necker).

— Duncker and Mohr, Mitteil.

Zool. Mus. Hamburg, vol. 41, p. 18,

1925 (Kewieng Nisa, New Mecklenburg;

Linden Harbor, New Pommernania;

Friedrich Wilhelm Harbor and

Dörperspitze, New Guinea). — Fowler,

Bull. Bishop Mus., no. 38, p. 8, 1927

(Honolulu); New. Bishop Mus.,

orange stripes on side. Crimson

trunk across top of eye ball, in

also blue and yellow. See also

Roth. Meer., 1877, p. 7 (Red Sea). — Meyer,

Ann. Soc. Espér. Hist. Nat. Madrid, vol.

14, 1885, p. 7 (Rubi, New Guinea). —

Boulenger, Proc. Zool. Soc. London, 1887,

p. 237 (Muscat, Arabia).

(Klunzinger, Fische Roth. Meer., 1884, 5.

Serranus salmoides Day, Fishes of India,
1875, p. 20, pl. 4, fig. 3 (Andaman; India);

Fauna Brit. India, vol. 1, 1889, p. 452. —

Thurston, Pearl Fisher. Manar, 1890, p.

91 (Tuticorin). — Weber, Zool. Jahrbücher,

^{Syst.?} vol. 10, No. 2, 1897, p. 142 (Silloro River
mouth, Natal).

Bola? coioides Buchanan-Hamilton,

Fishes of Ganges, 1822, pp. 82, 369. Large

Gangetic estuaries.

Serranus coioides Cantor, Cat. Malayan

^{no} Fishes, 1850, p. 11 (Pinang Sea; Singapore).

Serranus maculosus Valenciennes, Hist.

Nat. Poiss., vol. 2, 1828, p. 332. No locality.

vol. 10, p. 115, pl. 8 A, 1928 (Pearl Harbor; Honolulu; Hecker; Suva; Hawaii; Maui; types of Hippocampus fisheri and H. hilonis). — Sowerby, Nat. Manchuria, vol. 4, p. 156, 1930 (Pei tai Ho). — Fowler, Mem. Bishop Mus., vol. 11, no. 5, p. 324, 1931 (reference). — Chevey, Inst. Océan. Indo Chien, 19^e Note, p. 19, August 25, 1932 (Cochin China; Annam).

Hippocampus guttulatus var. kuda
Schmeltz, Cat. Mus. Godeffroy, no. 5, p. 39, 1874 (Samoa).

vol. 1, 1889, p. 451. — Weber, Zool.

Forschungen. Austral. Verein, vol. 5,

1895, p. 262 (Thursday Island, Queensland).

Epinephelus pantherinus Bleeker, Ned.

Tijds. Dierk., vol. 1, 1863, p. 344 (Madagascar);

Atlas Ichth. Ind. Néerl., vol. 7, 1873-76, p.

51 (Sumatra, Pinang, Singapore, Buitang,

Banka, Java, Madura, Borneo, Celebes,

Timor, Batjan, Amboina, Philippines);

Verh. Kon. Akad. Wet. Amsterdam, vol. 14,

ser. 2, 1874, p. 78 (Philippines).

Holocentrus salmoides Lacépède, Hist. nat.

Pois., vol. 4, 1802, pp. 346, 389; vol. 3, 1802, pl.

34, fig. 3. Grand Ocean [Indo-Pacific].

Serranus salmoides Valenciennes,

Hist. nat. Poiss., vol. 2, 1828, p. 343

(Mauritius, Seychelles, Red Sea, Suez). —

Peters, Arch. Naturg., 1855, p. 235 (Mozambique).

Günther, Cat. Fishes Brit. Mus., vol. 1, 1859,

p. 128 (Mauritius, Red Sea, India). —

Günzinger, Verh. zool.-bot. Gesell. Wien, vol. 20, 1870, p. 102 (Korea). —

Rossmann and Räuber, Zool. Ergebn. Reise

Syngnathus hippocampus (not
Linnaeus) Lichtenstein, Descript.
 Animal, p. 257, 1844 (Tanna, Society
 Islands).

Hippocampus hippocampus McCulloch, New. Queensland Mus., vol.
 8, pt. 2, p. 137, July 7, 1925 (reference);
 New. Austral. Mus., vol. 5, pt. 1, p.
 96, June 29, 1929 (reference).

first ray $3\frac{1}{8}$; a. III, 10, I, third spine $4\frac{1}{8}$, first ray $3\frac{1}{8}$; caudal $1\frac{1}{6}$, deeply forked; least depth of caudal peduncle 3; pectoral $1\frac{2}{5}$; ventral $1\frac{4}{5}$.

Brown, whitish below. Above 14 vertical dusky streaks, alternately darker and paler. Dorsal and caudal grayish, other fins whitish.

Mediterranean, Eastern Atlantic, South Africa, Natal, Zululand, Delagoa Bay.

53074 A.N.S.P. Delagoa Bay,

Portuguese East Africa. H. W. Bell Marley.
July 1923.
Length 165 mm.

52994 A.N.S.P. Delagoa Bay. ~~1927~~

H. W. Bell Marley. 1927. Length 210 mm.

Hippocampus moluccensis Bleeker,
 Nat. Tijds. Ned. Indië, vol. 3, p.
 (235) 305, 1852 (type locality,
 Amboina; Wahaï, Ceram). — Duméril,
 Hist. nat. Poiss., vol. 2, p. 506, 1870.

Hippocampus taeniopterus Bleeker,
 Nat. Tijds. Ned. Indië, vol. 3, p. (235)
 306, 1852 (type locality, Amboina;
 Wahaï), p. 238 (Wahaï), p. 717
 (Goessongassam at Koba, Banka);
 vol. 4, p. 93, 1853 (Amboina). —
Duméril, Hist. nat. Poiss., vol. 2, p.
 306, 1870.

Holocentrus pantherinus Lacépède, Hist.
Nat. Poiss., vol. 4, 1802, pp. 345, 389;
vol. 3, 1802, pl. 27, fig. 3. No Locality
(on Commerson).

Serranus pantherinus Valenciennes,
Hist. Nat. Poiss., vol. 2, 1829, p. 333
(Fort Dauphin, Madagascar). —
Guichenot, Mém. Soc. Hist. Nat. Cherbourg,
ser. 2, vol. 2, 1866, p. 145 (Madagascar).
— Day, Fauna British India,

Hippocampus comes (not Cantor)

Kaup, Archiv Naturges., 1853, pt. 1, p.
229 (on Bleeker); Cat. Lophobr.
Fish. Brit. Mus., p. 10, 1856 (Bourbon,
Timor, Sumatra, China Seas). —

Bleeker, Act. Soc. Sci. Ind.

Néerl., vol. 1, no. 3, p. (8) 80, 1856

(Macassar, Celebes). — Day,

Fishes of Malabar, p. 262, 1865. —

Duméril, Hist. nat. Poiss., vol.

2, p. 512, 1870 (China).

Can 29 Pagellus mormyrus (Linnaeus)
~~Sparus mormyrus~~ Linnaeus, Syst. Nat.,
 ed. 10, vol. 1, 1758, p. 281. In m. infero.

(Mediterranean.)

Pagellus mormyrus Gilchrist, Marine
 Biology. Rep. South Africa, no. 3, 1916, p. 6
 (egg and larva). $\frac{1}{2}$ Gilchrist and Thompson,
 Ann. Durban Mus., vol. 1, pt. 4, 1917, p. 363
 (references). $\frac{1}{2}$ Thompson, Marine Biology.
 Rep. South Africa, no. 4, 1918, p. 91 (references).
 $\frac{1}{2}$ Fowler, Proc. U. S. Nat. Mus., vol. 56,
 1919, pp. 212, 284 (Londro, Angola); Proc.
 Acad. Nat. Sci. Philadelphia, 1925, p. 238
 (Delagoa Bay). $\frac{1}{2}$ Barnard, Ann. South
 African Mus., vol. 21, pt. 2, 1927, p. 706
 (Saldanha Bay, Table Bay, False Bay, East
 London, Natal, Zululand coast, Delagoa
 Bay).

Depth $2\frac{7}{8}$; head $2\frac{7}{8}$, width 2. Snout
 $2\frac{1}{3}$ in head; eye $4\frac{2}{3}$, 2 in snout, $1\frac{1}{5}$ in

Hippocampus polytaenia Bleeker,
 Nat. Tijds. Ned. Indië, vol. 6, p. (314)
 338, 1854 (type locality, Larantuka,
 Flores); Act. Soc. Sci. Ind. Néerl.,
 vol. 1, no. 3, p. 6, 1856 (Manado);
 vol. 2, no. 7, p. 9, 1857 (Amboina);
 Verslag. Akad. Wet. Amsterdam,
 vol. 12, p. 30, 1861 (Singapore). —
Duméril, Hist. Nat. Poiss., vol. 2,
 p. 522, 1870 (compiled).

Hippocampus melanospilos Bleeker,
 Nat. Tijds. Ned. Indië, vol. 6, p. (458)
 505, 1854 (type locality, Amboina);
 Act. Soc. Sci. Ind. Néerl., vol. 2, no.
 7, p. 9, 1857 (Amboina); vol. 3, no. 4,
 p. 5, 1857-58 (Manado); vol. 5, no. 8,
 p. 2, 1858-59 (Manado); Verslag.
 Akad. Wet. Amsterdam, vol. 12, p.
 30, 1861 (Singapore); Ned. Tijds.
 Dierk., vol. 1, p. 151, 1863 (Batjan).

Serranus malabaricus (Schneider).
Holocentrus malabaricus Schneider, Syst.
 Ichth. Bloch, 1801, p. 319, pl. 63.
 Tranquebar.

Serranus malabaricus Day, Fishes of
 India, pt. 1, 1875, p. 19, pl. 4, fig. 2. —
Pearson, Rep. Marine Biol. Ceylon, 1912-13,
 pt. 4, p. E13 (Cheval Paar Group, North
 Cheval Paar, between Muttavaratu and
 Talavilla).

Epinephelus malabaricus Sauvage, Hist. nat.
 Madagascar, Poiss., 1891, p. 67. — Jordan
 and Seale, Bull. Bur. Fisher., vol. 26,
 1906 (1907), p. 19 (Cavite).

1563

— Duméril, Hist. nat. Poiss., vol. 2,
p. 505, 1870 (compiled).

Hippocampus japonicus Kaup, Cat.
Lophobr. Fish Brit. Mus., p. 7, pl. 1,
figs. 5-a, 1856 (type locality, Japan).
— Duméril, Hist. nat. Poiss., vol. 2,
p. 505, 1870 (Japan). — Jordan and
Snyder, Annot. Zool. Japon., vol. 3,
p. 59, 1901 (reference); Proc. U. S. Nat.
Mus., vol. 24, p. 16, pl. 10, 1901 (1902)
(Hakodate; Matsushima; Tokyo;
Onomichi; Wakanoura). — Franz,
Abhandl. Kon. Bayer. Akad. Wiss.,
vol. 4, Suppl. Band 1, p. 23, 1910
(Izushi; Sagami Bay). — Snyder,
Proc. U. S. Nat. Mus., vol. 42, p. 408,
1912 (Shiogama; Isuruga). — Jordan,
Tanaka, Snyder, Journ. College Sci.
Tokyo, vol. 33, p. 99, fig. 75, 1913

spots on the fins, numerous and greatly smaller than in Verranus malabaricus.

8080. Burian Island. March 5, 1909.
Length 425 mm.

22871. Davao, Mindanao. May 16, 1908. Length 128 mm.

6953. Iloilo market. May 31, 1908.
Length 211 mm.

6299 and 20649. Manila market.
June 13, 1908. Length 149 to 315 mm.

6304, 10625 to 10627. Manila market.
June 17, 1908. Length 114 to 384 mm.

12409 and 12411. Manila market.
June 25, 1908. Length 118 to 173 mm.

(reference) . — Rendahl, Archiv
für Zool., vol. 16, no. 2, p. 5, 1924
(Chihli, Shan Hai Kuan, Fengtien,
Hulutao) . — Jordan and Hubbs,
Mem. Carnegie Mus., vol. 10, no. 2, p.
199, 1925 (

— Sowerby, Nat. Manchuria, vol. 4,
p. 155, 1830 (compiled) . — Chu,
Biol. Bull. St. John's Univ., no. 1,
p. 99, January 1931 (reference) . —
Schmidt, Trans. Pac. Comm. Acad.
Sci. U. S. S. R., ~~1931~~ vol. 2, p. 34, 1931
(Misaki) .

spine $3\frac{2}{3}$ to $6\frac{2}{3}$, fourth ray $2\frac{1}{8}$ to $2\frac{1}{2}$,
caudal $1\frac{2}{3}$ to $1\frac{4}{5}$, convex behind;
least depth of caudal peduncle $3\frac{3}{5}$ to
 $3\frac{3}{4}$; pectoral $1\frac{4}{5}$ to 2; ventral $2\frac{1}{10}$
to $2\frac{1}{3}$.

Brown, little paler on belly and
lower surfaces. Back with 6
obscure darker band like blotches.
Body, head and fins with well spaced
blackish spots, variably distributed.

Bull. Bur. Fisher., vol. 26, 1906 (1907), p.
76, fig. 11. Bacon.

1565

Hippocampus punctulatus (not
Guichenot 1853) Kaup, Cat. Lophobr.
Fish. Brit. Mus., p. 14, ^{pl. 2, fig. 1,} 1856 (Leyden
Museum material). — Günther,
Fishes of Zanzibar, p. 139, 1865
(Zanzibar). — Ogilby, Proc.
Linn. Soc. New South Wales, ser. 2,
vol. 23, p. 739, 1899 (Lord Howe
Island). — Waite, Rec. Austral.
Mus., vol. 5, pt. 3, p. 196, March 11,
1904 (reference).

Hippocampus guttulatus (not Cuvier)
Günther, Fishes of Zanzibar, p. 139,
1865 (Aden; Zanzibar). — Günther,
Cat. Fish. Brit. Mus., vol. 8, p. 202,
1870 (Gambia; Zanzibar; East Indies;
Amboina; Madras; Singapore; Japan;
Red Sea; Flores). — Schmeltz,
Cat. Mus. Godeffroy, no. 5, p. 39, 1874
(Tonga). — Bleeker, Ned. Tijds.
Dierk., vol. 4, p. 126, 1873 (1874)
(reference). — Peters, Monatsb. Akad.
Wiss. Berlin, p. 851, 1876 (1877)
(Timor). — Day, Fishes of India,
pt. 2, p. 682, pl. 174, fig. 6, 1876. —
Schmeltz, Cat. Mus. Godeffroy, no. 7,
p. 61, 1879 (Tonga). — Macleay, Proc.

mark ventral, striate with age;
preopercle edge with extremely
least or slightly convex; hind
jugal; interorbital 8 to 9, nearly
when its diameter somewhat $\frac{3}{2}$ of

interorbital in young to $1\frac{1}{3}$ in interorbital
with age; maxillary extends well
beyond eye, expansion $1\frac{1}{4}$ to $1\frac{2}{3}$, length
 $2\frac{1}{8}$ to $2\frac{1}{6}$ in head from snout tip;
teeth in narrow band in jaws in
young, triserial in front of mandible
but becoming biserial laterally, though
in young largely biserial; pair of small
canines in front of each jaw; band of
fine teeth on vomer and each palatine;
hind nostril becomes twice size of front
nostril with age, though always much
less than pupil; interorbital $4\frac{7}{8}$ to $6\frac{3}{4}$
in head from snout tip, level; hind
preopercle edge denticulate; median
opercular spine nearer lower, ^{which} anterior

Ann. Soc. New South Wales, vol. 8,
p. 279, 1883 (southeast coast New
Guinea). — Pöhl, Cat. Mus.
Godeffroy, No. 9, p. 42, 1884 (South
Sea). — Boulenger, Proc. Zool.
Soc. London, p. 666, 1887 (Muscat).
— Elera, Cat. Fauna Filipinas, vol. 1,
p. 598, 1895 (Luzon, Manila Bay,
Cebu). — Ishikawa and Matsuura,
Cat. Fish. Mus. Tokyo, p. 4, 1897
(reference). — Duncker, Mitteil.
naturh. Mus. Hamburg, vol. 21, p.
189, 1903 (1904) (reference). —
Bedot, Rev. Suisse Zool., vol. 17,
p. 169, 1909 (Amboina). — Günther,
Journ. Mus. Godeffroy, vol. 9, pt. 17,
p. 435, 1910 (Samoa, Tanga, Society,
Ponape, New Pomerania, Hawaiian
Islands). — Kendall and Goldsbrough,
New. Mus. Comp. Zool., vol. 26, p. 264,

twelve miles south of New Guinea
coast at Katow.

Serranus estuarinus Macleay, Proc.
Linn. Soc. New South Wales, vol. 8, 1883,
p. 200. Mary River, Queensland.

Epinephelus estuarinus Ogilby, Ann.
Queensland Mus., no. 1, 1911, p. 50 (Mary
River).

Serranus phaeostigmaeus Fowler,
Proc. Acad. Nat. Sci. Phila., 1907, p.
255, fig. 2. Hawaiian Islands.

1562
1911 (Suva). — Pietschmann, Jahrb.
hassau. Ver. Naturk., pt. 66, p. 197.
1913 (Friedrich-Wilhelm Harbor,
New Guinea). — Chu, Biol. Bull.
St. John's Univ., no. 1, p. 98, January
1931 (reference).

Hippocampus monckee (not Bleeker)
Günther, Fishes of Zanzibar, p. 139,
1865 (Aden; Zanzibar).

Gen. Afr. Central, 1861, p. 3. Mouth
of Quarta River.
Analogous to southern Allegheny and
Kaskaskia, Ill. Ann. Soc. Nat. Hist. Phila.
vol. 1, 1876, p. 269, pl. 4, fig. 3. About

line to caudal base and 11 to 20
more on latter; 17 to 20 scales
above, 34 to 40 below, 37 to 40
predorsal forward to occiput only;
23 to 25 rows across cheek to
preopercle edge; body scales
without small basal auxiliary
scales; fine scales over most all
fins; maxillary with upper half of
expansion finely scaled in 7 or 8
transverse rows. Scales with 4 or 5
basal radiating striae, with 1 to 5
more incomplete auxiliaries; circuli
fine.

D. VII or VIII, II, 9, I or II, 10, I,

Hippocampus novae-hollandiae 1568
(not Steindachner) Schmeltz, Cat.
Mus. Godeffroy, no. 4, p. 28, 1869
(Viti Levu); no. 5, p. 38, 1874
(Viti Levu). — Alleyne and
Macleay, Proc. Linn. Soc. New
South Wales, vol. 1, p. 354, 1876
(New Guinea). — Schmeltz, Cat.
Mus. Godeffroy, no 7, p. 61, 1879
(Viti). — Pöhl, Cat. Mus. Godeffroy,
no. 9, p. 42, 1884 (Viti Levu).

with age larger, make frame and
more distinct or contrasted on
breast and belly. In many ~~alcoholic~~
specimens dark rings fade and
leave only gray spots. These spots
extend over all fins as well, except
on pectoral they do not reach quite

A 695. Sidmil Island, vicinity of
Darvel Bay, Borneo. September 26,
1909. Length 425 mm.

A 1076. Matara Island, Rodinga
Bay, Gillolo Island. November 26, 1909.
Length 450 mm.

Hippocampus kaupii Duméril, Hist.
Nat. Poiss., vol. 2, p. 516, 1870 (no
type locality; Leyden Museum).

Hippocampus rhynchomacer Duméril,
Hist. Nat. Poiss., vol. 2, p. 519, 1870
(type locality, "Mer des Indes?";
~~Albion~~ Singapore; China; Cochin).

$2\frac{2}{5}$ to $2\frac{4}{5}$; u. III, 8, I, third spine $4\frac{1}{2}$ to $5\frac{1}{4}$, fifth ray $2\frac{4}{5}$ to $2\frac{7}{8}$; caudal 2 to $2\frac{1}{8}$, rounded; least depth of caudal peduncle $3\frac{1}{3}$ to $3\frac{1}{2}$; pectoral $1\frac{7}{8}$ to $2\frac{1}{8}$; ventral $2\frac{1}{8}$ to $2\frac{2}{5}$.

Brown, with large darker spots, blotches and markings or marblings. Indistinct dusky streak across opercle above. Gills with 3 broad dusky transverse bands. Indistinct broken blackish streaks along back, more or less broken into reticulations. Five large blackish saddle like blotches across back, first 4 at bases of dorsal fins and last deeply colored on caudal peduncle above. Indistinct broad transverse bands across anal region. Lower surface of body more or less marbled and with same paler markings than upper surfaces.

Hippocampus antiquorum (not ¹⁸⁷⁰
Leach) Günther, Cat. Fish. Brit.
Mus., vol. 8, p. 199, 1870 (Cape York;
Australia?). — Macleay, Proc. Linn.
Soc. New South Wales, ser. , vol. 6,
pt. 2, p. 304, 1882 (copied).

(384)
or diffuse gray brown blotches along
side. Inside gill opening orange red.
Iris yellowish. Fins dilute olivaceous,
slightly grayish dusky. Edges of caudal
and anal pale. Pectoral pale olive,
axil pale orange. Ventral pale olive
gray, dusky terminally.

1571

Hippocampus kelloggi Jordan and
Snyder, Proc. U. S. Nat. Mus., vol.

— Reeves, Journ. Pan. Pac. Res. Inst.,
vol. 3, no. 2, p. 7, 1927 (reference).

— Chu, Biol. Bull. St. John's Univ.,
no. 1, p. 98, January 1931 (reference).

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Hippocampus aterrimus Jordan and
Snyder, Proc. U. S. Nat. Mus., vol.
24, p. 14, pl. 9, 1901 (1902) (type
locality, Ishigaki, Riu Kiu). —

Jordan and Seale, Bull. Bur.
Fisher., vol. 26, p. 10, 1906 (1907)
(Cavite). — Franz, Abhandl. Kon.

Bayer. Akad. Wiss., vol. 4, Suppl.
Band 1, p. 23, 1910 (Fukuoka, Yokohama).

— Schmidt, Trans. Pac. Comm.
Acad. Sci. U. S. S. R., vol. 1, p. 25,
1930 (Istunan, Okinawa); vol. 2, p.
33, 1931 (Kagoshima).

Hippocampus kelloggi Jordan and
Snyder, Proc. U. S. Nat. Mus., vol.
 24, p. 14, pl. 8, 1901 (1902) (type
 locality, Kagoshima). — Jordan,
Tanaka, Snyder, Journ. College
 Sci. Tokyo, vol. 33, p. 98, fig. 73,
 1913 (reference).

Hippocampus aterrimus Jordan and
Snyder, Proc. U. S. Nat. Mus., vol.
 24, p. 14, pl. 9, 1901 (1902) (type
 locality, Ishigaki, Riu Kiu). —
Jordan and Seale, Bull. Bur.
 Fisher., vol. 26, p. 10, 1906 (1907)
 (Cavite). — Franz, Abhandl. Kon.
 Bayer. Akad. Wiss., vol. 4, Suppl.
 Band 1, p. 23, 1910 (Fukuoka, Yokohama).
 — Schmidt, Trans. Pac. Comm.
 Acad. Sci. U. S. S. R., vol. 1, p. 25,
 1930 (Isuman, Oshima), vol. 2, p.
 33, 1931 (Kagoshima).

1913-4, p. 4.
Prionophelus sexmaculatus Boulenger,
Fishes Brit. Mus., vol. 1, 1895, p. 194
(Red Sea, Zanzibar, Mauritius, Tahiti).

vol. 28, 1905, p. 781 (Negros); Bull. Bur.
 Fisher., vol. 26, 1906 (1907), p. 20 (Cavite).
 — Evermann and Seale, Bull. Bur.
 Fisher., vol. 26, 1906 (1907), p. 75 (Bacon).
 — Seale and Bean, Proc. U. S. Nat. Mus.,
 vol. 33, 1907, p. 242 (Zamboanga). — Regan,
 Ann. Natal Mus., vol. 1, pt. 3, 1908, 244
 (Congella). — Jordan and Richardson,
 Mem. Carnegie Mus., vol. 6, no. 4, 1909, p.
 183 (Takao). — Gilchrist and Thompson,
 Ann. South Afr. Mus., vol. 6, 1908-10, p.
 220 (Natal). — Snyder, Proc. U. S. Nat.
 Mus., vol. 42, 1912, p. 498 (Okinawa). —
Weber, Siboga Exped., vol. ^{57, Riche} ~~65~~, 1913, p. 205
 (Hainyssi, Makassar). — Regan, Ann.
 Durban Mus., vol. 1, 1914-17, p. 167 (Durban).
 — Barnard, Ann. South Afr. Mus., vol.
 21, 1927, p. 484 (Natal coast).

Hippocampus fisheri Jordan and Evermann, Bull. U. S. Fish Comm., vol. 22, p. 169, 1902 (1903) (type locality, Kailua; Hilo); vol. 23, pt. 1, p. 119, fig. 36, 1903 (1905) (type).

Hippocampus hilonis Jordan and Evermann, Bull. U. S. Fish Comm., vol. 22, p. 169, 1902 (1903) (type locality, Hilo); vol. 23, pt. 1, p. 119, pl. 23, 1903 (1905) (type).

Hippocampus taeniops Fowler, Journ. Acad. Nat. Sci. Philadelphia, ser. 2, vol. 12, p. 501, pl. 7 (upper left figure), 1904 (type locality, Padang, Sumatra).

Philippines). — Fowler and Beam,
Proc. U. S. Nat. Mus., vol. 71, 1927, p. 6
(Benkoelen, Sumatra).

Serranus (Epinephelus) tauvina Zugmayer,
Abhandl. Bayer. Akad. Wiss., vol. 26, pt. 6,
1913, p. 10 (Aman).

Epinephelus tauwina Boulenger, Cat. Fishes
Brit. Mus., vol. 1, 1895, p. 244 (Red Sea,
Zanzibar, Natal, Muscat, Soc, Ceylon,
Madras, Vizagapatam, Bengal, Singapore,
Malay Archipelago, Borneo, Formosa, Amoy,
China, Ponapé, North Celebes, Amboina,
Pelew Islands, Port Essington, Port Denison,
Port Bowen, Java). — Jordan and Evermann,
Proc. U. S. Nat. Mus., vol. 25, 1902, p. 341

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1372

Hippocampus barbouri Jordan and
Richardson, Bull. Bur. Fisher., vol.
27, p. 247, fig. 8, 1907 (1908) (type
locality, Cuyo).

Red Sea, Arabia, Zanzibar,
Mozambique, Madagascar, Seychelles,
India, East Indies, Philippines,
Riu Kiu, Japan, Micronesia,
Polynesia. Reaches 330 mm. according
to Boulenger. Besides the dark
streak in the maxillary groove
the body is marked with multitudinous
small, crowded, whitish spots or
dots.

8137. Alibijaban Island, Ragay
Gulf, Luzon. March 6, 1909. Length
250 mm.

17755. Balikian Bay, Lubang
Island. July 17, 1908. Length 180 mm.

8869. Buang Bay, Talajit Island.
March 15, 1909. Length 176 mm.

18726. Butuanan Island, east coast
Luzon. June 13, 1909. Length 150 mm.

Hippocampus takaburai Tanaka,

Hypocampus takaburai Anonymous,
Illustrat. Jap. Aquat. Plant.
Animal, vol. 1, pl. 19, fig. 3, 1931
(error).

Depth $3\frac{1}{4}$ to $3\frac{1}{3}$; head $2\frac{1}{2}$ to $2\frac{3}{5}$, width $2\frac{1}{5}$ to $2\frac{1}{4}$. Snout $4\frac{1}{5}$ to $4\frac{4}{5}$ in head from snout tip; eye $4\frac{1}{5}$ to $6\frac{1}{3}$, $1\frac{1}{3}$ to $1\frac{4}{5}$ in snout, 1 to $1\frac{1}{3}$ in interorbital; maxillary extends little beyond eye, expansion $1\frac{1}{8}$ to $1\frac{2}{5}$ in eye, length $2\frac{1}{10}$ to $2\frac{1}{8}$ in head from snout tip; teeth small, conic, in bands in jaws; pair of upper front canines, outer maxillary teeth slightly larger or more robust than others, inner all hinged with inner front ones largest; pair of lower front canines, little closer than upper, inner teeth larger than outer and hinged, form 2 rows along each side of jaw; bands of fine teeth on vomer and palatine, none on tongue; nostrils subequal or hind.

Depth $7\frac{3}{4}$ to 8; head $4\frac{1}{2}$ to 5,
width $2\frac{1}{2}$ to $2\frac{3}{5}$. Snout $1\frac{4}{5}$ to $2\frac{1}{4}$ in head; eye 6 to $7\frac{1}{2}$, 3 to $3\frac{1}{4}$ in
snout; supraorbital tubercles
usually well developed, at front
each side much smaller and
often almost inconspicuous one;
coronet usually low, directed
obliquely back, with 5 more or
less distinct tubercles;
occipital keel behind coronet
spineless or only edge rough;
opercle with radiating ridges,
often indistinct.

Rings 11 + 33 to 37; tubercles
on ridges obsolete and blunt to
well developed or enlarged;
shields variably smooth to
covered with small tubercles.
Filaments on tubercles rarely present.
D. 16 to 18, on ^{or 2} $1\frac{1}{2}$ trunk and 2
caudal rings; A. 4; pectoral rays

Depth $I \frac{7}{8}$ to $2 \frac{1}{8}$; head $3 \frac{1}{4}$ to $3 \frac{2}{5}$, width $2 \frac{1}{4}$ to $2 \frac{2}{5}$. Snout $I \frac{1}{4}$ to $I \frac{1}{3}$; eye $4 \frac{3}{4}$ to $5 \frac{7}{8}$, $3 \frac{2}{5}$ to $4 \frac{1}{3}$ in snout, $I \frac{2}{3}$ to $I \frac{7}{8}$ in interorbital; teeth 18 to 20 in jaws, moderate; maxillary $4 \frac{1}{8}$ to $4 \frac{2}{3}$ in head; interorbital 3 to $3 \frac{1}{8}$; opercle, preopercle flange and humeral arch with radiating striae, rather fine, not prominent. Gill rakers 8 - 16, short, cuneate, fleshy, flexible.

Scales broadly ovoid, small, narrowly imbricated, circuli extremely fine and numerous; apical denticles 14 to 22, with II to I3 transverse series of basal elements more or less as complete cusps.

D. IX, 27, 1 to 29, 1, last spine $I \frac{4}{5}$ to $2 \frac{1}{8}$ in head, nineteenth ray $I \frac{1}{3}$ to $I \frac{2}{3}$; A. III, 25, 1 to 27, 1, third spine $2 \frac{1}{2}$ to $2 \frac{3}{5}$, nineteenth ray $I \frac{1}{4}$ to $I \frac{2}{3}$; caudal deeply emarginate or lunate, end produced in points, long with age 2 to $3 \frac{2}{3}$ in combined head and body;

least depth of caudal peduncle $2 \frac{2}{3}$ to $2 \frac{3}{4}$ in head; pectoral I to $I \frac{1}{10}$; ventral $I \frac{1}{6}$ to $I \frac{1}{3}$; caudal spine $2 \frac{3}{5}$ to $3 \frac{1}{3}$.

15- to 17.

1576

Variably dark brown to black, with transverse dark to black bands or elongate dots or blotches, with or without numerous white spots. Some examples pale or light brown with tubercles and crests darker, the ventral trunk band often black. Sometimes large pale or whitish blotches occur. Dorsal usually with dark submarginal band.

Red Sea, Aden, Zanzibar, Mozambique, Natal, Bourbon, India, Singapore, East Indies, Philippines, Indo China, China, Formosa, Riu Kiu, Japan, Queensland, Lord Howe Island, Melanesia, Micronesia, Polynesia, Hawaii.

Depth $1 \frac{7}{8}$ to $2 \frac{1}{10}$; head $3 \frac{1}{3}$ to $3 \frac{4}{5}$, width $1 \frac{7}{8}$ to $2 \frac{1}{8}$.

Snout $1 \frac{1}{5}$ to $1 \frac{2}{5}$; eye $3 \frac{3}{4}$ to 5, $2 \frac{3}{4}$ to 4 in snout, $1 \frac{1}{5}$ to $1 \frac{4}{5}$ in interorbital; teeth 20 in each jaw; maxillary $3 \frac{2}{3}$ to 4 in head; interorbital $2 \frac{4}{5}$ to $3 \frac{1}{8}$, convexly elevated; opercle, preopercle flange and humeral arch with rather obsolete striae. Gill rakers 6 - 13, low, small points.

Scales small, ovoid, circuli extremely fine; apical denticles II to I4, with 6 or 7 series of basal elements as low cusps.

D. IX, 25, 1 or 26, 1, ninth spine $1 \frac{7}{8}$ to 2 in head, first ray $1 \frac{3}{5}$ to $1 \frac{4}{5}$; A. III, 23, 1 to 25, 1, third spine $2 \frac{1}{3}$ to $2 \frac{2}{3}$, first ray $1 \frac{4}{5}$ to 2; caudal deeply emarginate, lunate, $2 \frac{2}{5}$ to $2 \frac{2}{3}$ in combined head and body; least depth of caudal peduncle $2 \frac{3}{5}$ to $2 \frac{7}{8}$ in head; pectoral I to $1 \frac{1}{6}$; ventral $1 \frac{1}{5}$ to $1 \frac{1}{3}$; caudal spine $2 \frac{7}{8}$ to 5.

1408.

1577

D. 5196. [837.] Capitanillo Light,
N. $5^{\circ}30'$ W., 14.30 miles (lat. $10^{\circ}44'$
 $30''$ N., long. $124^{\circ}07'30''$ E.), off
northern Cebu. April 3, 1908.

Length 123 mm.

8565⁸⁵⁶⁶, Cebu market: April 5, 1908.

Length 110 to 130 mm.

18831. Cebu market. March 27, 1909.

Length 180 mm.

One example. Cebu market.

March 29, 1909. Length 165 mm.

22432. Cebu market. August 20,
1909. Length 200 mm.

18801. Cebu market. August 21,
1909. Length 150 mm.

Six examples. Cebu market.

August 27, 1909. Length 160 to 210 mm.

[1821.] Cebu market. August 28,
1909. Length 110 mm.

Apogon ceramensis Bleeker, Nat. Tijds.
 Ned. Indië, vol. 3, 1852, p. 256. Wakai,
 Ceram. — Günther, Cat. Fishes Brit. Mus.,
 vol. 1, 1859, p. 235 (copied). — Day, Fishes of
 India, pt. 1, 1875, p. 65, pl. 17, fig. 6
 (Nicobars). — Károli, Termesz. Füzetek,
 Budapest, vol. 5, 1882, p. 152 (Varangoon,
 Singapore). — Meyer, Ann. Soc. Españ.
 Hist. Nat. Madrid, vol. 14, 1885, p. 12
 (Kordo, Mysore). — Day, Fauna Brit.
 India, vol. 1, 1889, p. 501. — Weber,
 Zool. Forschungsr. Austral. Semw, vol.
 5, 1895, p. 263 (Amboina). — Steindachner,
 Abhandl. Senckenberg. naturf. Gesell.,
 vol. 25, 1900, p. 416 (Ternate). — Weber,
 Siboga Exped., vol. ^{57, Fische,} 65, 1913, p. 228 (Kangeang
 Island; Bina Bay; Kupang, Timor).
 — Beaufort, Bijdr. Dierk., Amsterdam,
 1913, p. 114 (Batu mera mouth, Amboina;
 Majalibit Bay, Waigiu).

8164, 8165. Cebu market.

August 29, 1909. Length 200 to 210 mm.

Five examples. Cebu market.

September 1, 1909. Length 150 to 203 mm.

19972, 19977. Cebu market.

September 3, 1909. Length 185 to 200 mm.

4414. D. 5225. Corregidor Light,
N. 10° E., 9.50 miles (lat. $14^{\circ}13'24''$
N., long. $120^{\circ}32'36''$ E.), China Sea
south of Corregidor. May 4, 1908.
Length 105 mm.

Two examples. Cotabato, Mindanao,
below river mouth. May 20, 1908.
Length 120 to 130 mm.

19704, 22168. Davao, Mindanao.
May 16, 1909. Length 104 to 150 mm.

20519, 20520. Guigulugan, Leyte.
April 2, 1908. Length 150 to 210 mm.

Amia laterale (Valenciennes)

Apogon lateralis Valenciennes, Nouv. Ann. Mus. Hist. Nat. Paris, vol. 1, 1832, p. 58. Vanicolo. — Guichenot, Mem. Soc. Hist. Nat. Cherbourg, ser. 2, vol. 2, 1866, p. 145 (Madagascar).

Amia lateralis Jordan and Seale, Bull. Bur. Fisher., vol. 25, 1905 (1906), p. 246, fig. 40 (Apia, Samoa). — Jordan and Richardson, Bull. Bur. Fisher., vol. 27, 1907 (1908), p. 254 (Cuyo). — Snyder, Proc. U. S. Nat. Mus., vol. 49, 1912, p. 497 (Okinawa, Riu Kiu).

4326. D. 5140. Zolo Light, S. 33° W., 6.10 miles (lat. $6^{\circ}08'45''$ N., long. $121^{\circ}03'E.$), vicinity of Zolo.

February 14, 1908. Length 155 mm.

D. 5174. Zolo Light, E. 2.60 miles (lat. $6^{\circ}03'45''$ N., long. $120^{\circ}57'E.$), vicinity of Zolo. March 5, 1908. Length 55 mm.

One example. Manila Harbor.

January 4, 1908. Length 150 mm.

4545. Manila Harbor. December 30, 1907. Length 120 mm.

Two examples. Manila market.

April 17, 1909. Length 165 to 160 mm.

24012. Marikina Bay, Manila Bay, Luzon. January 27, 1907. Length 106 mm.

One example. Mati, Davao Bay, Mindanao. May 15, 1908. Length 85 mm.

brown longitudinal band, that
of soft dorsal further from base
of fin.

Zanzibar, East Indies, Philippines.
Recorded from Japan by Károli.

2 examples. Monucan River, Camp Overton,
Mindanao. August 6, 1909. Length 57 to 65 mm.

1 example. River, brackish water, Port
Dupon, Leyte. March 17, 1909. Length 37 mm.

19886. Matnog Bay, Luzon.

May 31, 1909. Length 225 mm. male.

21997. near mouth of Tuguegar
River, Luzon. February 25, 1909.
Length 155 mm. male.

22432. Lucot Bay, Manila.

January 29, 1909. Length 110 mm.

Three examples. Ragay River,
Ragay Gulf, Luzon. March 13, 1909.
Length 50 to 100 mm.

19254, 19255. (Kohagen collection).
Length 200 to 270 mm.

22565. Lingan Island (N.),
West, 0.7 mile (lat. $5^{\circ}45'50''$ N.,
long. $120^{\circ}36'00''$ E.), north of Tawi
Thiri. September 21, 1909. Length
~~200 to 300~~ 30 mm.

One example. Subic Bay, Luzon.
January 7, 1909. Length 65 mm.

At last medially rounded black spot size of pupil. Second dark line, narrower, extends from suprascapula along lateral line and ending below soft dorsal. Besides dark postocular band 2 dusky bars radiate from lower hind eye edge down over cheek. Head also more or less sprinkled with dark brown dots or specks. Body along each dorsal fin base with narrow dusky line. An underlaid dull brown line along lower side of tail longitudinally. Another from base of last dorsal spine back to base of last dorsal ray. Fins all pale to whitish, front edge of spinous dorsal dusky and soft dorsal and anal each with

D. 5594. Ternate Island
 (N.W.), 3.33° W., 0.5 mile (lat. $5^{\circ} 57'$
 $45''$ N., long. $121^{\circ} 51' 15''$ E.), off
 Ternate Island vicinity. September 11,
 1909. Length 7 to 55 mm. 5 examples.

D. 5595. Zamboanga Light, N.
 31° W., 0.1 mile (lat. $6^{\circ} 54' 00''$ N., long.
 $122^{\circ} 04' 30''$ E.), off Zamboanga,
 Mindanao. October 7, 1909. Length
 27 to 36 mm.

~~D. 5595~~ D. 5596. Zamboanga
 Light, N. 31° W., 0.1 mile (lat. $6^{\circ} 54' 00''$
 N., long. $122^{\circ} 04' 30''$ E.), off Zamboanga,
 Mindanao. October 10, 1909. Length 38
 to 41 mm. Two examples.

13613. Ambona market, Dutch
 East Indies. December 6, 1909. Length
 202 mm. Male.

slender and each with small basal scale. Scales with 8 to 10 basal radiating striae; 16 to 53 apical denticles, with 3 or 4 transverse series of basal elements; ~~and~~ circuli moderate.

D. VI - I, 9, I, third spine $1\frac{7}{8}$ to 2 in total head length, first ray $1\frac{3}{4}$ to $1\frac{4}{5}$; A. II, 8, I, second spine $2\frac{1}{3}$ to $2\frac{2}{3}$, first ray $2\frac{1}{8}$ to $2\frac{1}{5}$; caudal $1\frac{1}{8}$ to $1\frac{1}{4}$, deeply emarginate behind; least depth of caudal peduncle $2\frac{3}{4}$ to 3; pectoral $1\frac{1}{2}$ to $1\frac{2}{3}$; ventral $1\frac{7}{8}$ to 2.

Pale brown above, inclining to whitish below, with silvery white reflections on side of head and trunk. Iris white, except as crossed by dark band from snout tip to eye and back along median body axis to caudal base.

1967. D. 5310. China Sea, vicinity
Hong Kong (lat. $21^{\circ}33'N$, long. $116^{\circ}13'E$). November 4, 1908. Length 75
mm, male.

~~136~~

One example. Sandakan Bay,
Borneo. March 2, 1908. Length 120 mm.

Amia amboinensis (Bleeker)

- Apogon amboinensis Bleeker, Nat. Tijds.
 Ned. Indië, vol. 5, 1853, p. 329. Amboina.
 — Günther, Cat. Fishes Brit. Mus., vol. 1,
 1859, p. 234 (copied). — Playfair, Fishes
 of Zanzibar, 1866, p. 19 (Zanzibar). —
Károli, Termész. Füzetek, Budapest,
 vol. 5, 1882, p. 152 (Singapore; Kobe).
 — Beaufort, Bijdr. Dierk., Amsterdam,
 1913, p. 115 (Waiu waigé River, Waigiu).
Amia amboinensis Bleeker, Atlas Ichth.
 Ind. Néerl., vol. 7, 1873-76, p. 90
 (Singapore, Biliton, Bawean, Bouru,
 Amboina^{Goram}); vol. 8, 1876-77, pl. (68) 346,
 fig. 1.

1583
A.N.S.P., No. 27409. Padang, Sumatra.

A. C. Harrison and H. L. Hiller.

Type of Hippocampus taeniops.

Length 140 mm.

1584

Hippocampus fuscus Rüppell

Hippocampus fuscus Rüppell, neue
Wirbelth. Fische, p. 143, pl. 33, fig. 3,
1835 (type locality, Oueda, Red Sea).
— Günther, Cat. Fish. Brit. Mus.,
vol. 8, p. 198, 1870 (compiled). —
Duméril, Hist. Nat. Poiss., vol. 2,
p. 511, 1870 (Suez). — Klunzinger,
Verh. Zool. Bot. Ges. Wien, vol. 21, p.
653, 1871 (Red Sea).

Archiv. Naturges., 1853, pt. 1, p. 228,
(reference);

Hippocampus lichtensteinii Kaup, Cat.
Lophobr. Fish Brit. Mus., p. 8, 1856.
(type locality, probably Red Sea?).
— Günther, Cat. Fish. Brit. Mus.,
vol. 8, p. 205, 1870 (compiled).

Serranus diapar Playfair, Fishes of
Zanzibar, 1866, p. 6, pl. 1, figs. 2-3.
Seychelles and Zanzibar. — Günther,
Journ. Mus. Godeffroy, vol. 1, pt. 1, 1873,
p. 9 (Marshall Group). — Castelnau,
Proc. Linn. Soc. New South Wales, vol. 3,
1878, p. (349) 365 (Port Jackson).

Hippocampus obscurus (Ehrenberg)
Klunzinger, Verh. Zool. Bot. Ges.
Wien, vol. 21, p. 653, 1871 (type
locality, not given [= Red Sea] as
example evidently in "Mus. Berol.^m").

criculi fine.

D. XII, 10, I, third spine 1 in head, fifth ray $2\frac{1}{3}$; A. III, 9, I, second spine $2\frac{2}{3}$, first ray $2\frac{4}{5}$; caudal 1, deeply emarginate; ventral $1\frac{2}{5}$; pectoral $2\frac{1}{2}$ in combined head and body to caudal base.

Pale uniform brown. Brown bar across front of interorbital.

Natala, South Africa, ~~Brabantia, Natala, Natala~~ Australia, Victoria.

Pagrus filamentosus Valenciennes seems to differ in having much larger scales on the cheeks, but 5 rows to the preopercle angle.

53032 A.N.S.P. Natal coast in 30 fathoms. H.W. Bell Marley¹⁹²⁵. Length 263 mm. Type of Sparus lophus.

Depth 7; head $4\frac{4}{5}$. Snout $2\frac{1}{2}$ in head from snout tip; eye $5\frac{1}{8}$, 2 in snout; coronet rounded convex knob, short spines before and behind.

Rings 10 or 11 + 30 to 33. Tubercles all low on head and body.

D. 15 or 16; pectoral 16.

Dark brown. Length 89 mm.

(Rüppell, Klunzinger)

Red Sea. Known by its rounded coronet and low rounded tubercles, also uniform coloration.

701

interorbital; maxillary reaches hind nostril, expansion 3 in eye, length $2\frac{1}{2}$ in head; upper teeth with outer row enlarged, conic and inner band of fine anterior teeth; posteriorly 4 rows of molars, of which third largest and outer next in size, lower similar and only 3 rows of molars; interorbital $3\frac{4}{5}$, broadly convex. Gill rakers $9+15$, lanceolate.

Scales 56 in lateral line to caudal base and 4 more on latter; 4 above, 13 basal, 15 predorsal, 5 rows on cheek to preopercle ridge; muzzle, interorbital and most of preopercle flange naked. Scales with 8 or 9 basal radiating striae; 53 to 72 apical denticles, with 1 or 2 transverse series of basal elements; circuli fine.

D. XI, 12, I, fourth spine 3 in head,

1587

Hippocampus dahl Ogilby

Hippocampus dahl Ogilby, Ann.
Queensland Mus., no. 9, ^{pt. 1,} p. 17,
1908 (type locality, ~~Moreton Bay; hoosa~~
^{Coast of Southern Queensland}).
— Mc Culloch and Whitley, Mem.
Queensland Mus., vol. 8, pt. 2, p. 138,
July 7, 1925 (reference). — Mc
Culloch, Mem. Austral. Mus., vol. 5,
pt. 1, p. 96, June 29, 1929 (reference).

Hippocampus lenis (de Vis) Ogilby,
Ann. Queensland Mus., no. 9, pt. 1,
p. 18, 1908 (type locality, hoosa,
Queensland) (no description).

Denison, Cape York, ~~Queensland~~). —
Klunzinger, Verh. zool. bot. Gesell.
Wien, vol. 20, 1870, p. 684 (Kosseir, Red
Sea). — Day, Fishes of India, pt. 1,
1875, p. 22, pl. 5, fig. 3 (Sind). —
Alleyne and Macleay, Proc. Linn. Soc. New
South Wales, vol. 1, 1876, p. 264 (Cape
Grenville, Queensland). — Károli, Termesz.
Füzetek, Budapest, vol. 5, 1882, p. 149
(Yokohama). — Klunzinger, Fische Roth.
Meer., 1884, p. 4. — Day, Fishes Brit.
India, vol. 1, 1889, p. 454. — Pearson,
Rep. Gov. Marine Biol. Ceylon, 1912-13, pt. 4,
p. E 13 (between Chilaw and Ceylon); 1914,
p. E 2 (between Talavilla and Chilaw). —
Fowler, Bishop Mus. Bull., no. 38, 1927, p. 14
(Fanning Islands).

Depth $1\frac{2}{3}$ to 2 in head, body slender. Snout $1\frac{4}{5}$ to 2 in head, much longer than postorbital; eye $3\frac{1}{2}$ to 4 in snout; frontal ridges low, convergent anteriorly, descend gradually to junction on snout; moderate supraorbital spine blunt, tip more or less coarsely granulose, directed outwards and backwards; no postorbital, suborbital or temporal spines; coronet low, preceded by rather short ridge, which terminates in slightly hooked spine, summit surrounded by 3 pairs of low, blunt, finely denticulated tubercles with unpaired, median, hooked spine posteriorly; nuchal ridge high, with irregular granulose profile; opercle with delicate, divergent striae.

Rings 11 + 40 or 41. Pectoral arch

with 3 widely separated tubercles, lower most prominent. Ridges, especially median abdominal, with well developed subacute tubercles. Three hind dorsal rings elevated above others. Dorsal ridge of tail not continued on body rings; ventral ridge continuous with but on lower plane than lateral body ridge, without cessation of tubercles.

D. 20 or 21, on 3 trunk and 1 caudal ring.

Brown, sides of abdomen with golden tinge. Snout and sides of head dull lead blue. Tips of trunk tubercles light colored, forming bands. Dorsal fin with dark basal band. Iris white. Length 105 mm. (Ogilby.)
Queensland.

1590

Hippocampus trimaculatus Leach

Hippocampus trimaculatus Leach,

Zool. Miscellany, ^{vol. 1,} p. 104, 1814

(type locality, "Habitat in mari ^{at Siam} Siamensi"). —

Günther, Cat. Fish. Brit. Mus.,
vol. 8, p. 204, 1870 (types; types
of Hippocampus trimaculatus;
Tenasserim). — Bleeker, Ned.

Tijds. Dierk., vol. 4, p. 126, 1873 (1874)

(reference). — Day, Fishes of India,
pt. 2, p. 682, pl. 174, fig. 7, ¹⁸⁷⁶ (Andaman,
Tenasserim, Pinang, China Sea). —

Elera, Cat. Fauna Filipinas, vol. 1,
p. 598, 1895 (Luzon; Cavite; Santa Cruz).

— Duncker, Mitteil. Naturh. Mus.

— Weber and Beaufort, Fish. Indo Austral.
Archip., vol. 4, p. 112, 1922 (Atchin, Sumatra;
Siam).

→ Chu, Biol. Bull. St. John's Univ.,
no. 1, p. 99, January 1931 (reference).

1590

Hippocampus trimaculatus Leach

Hippocampus trimaculatus Leach,

Zool. Miscellany, ^{vol. 1,} p. 104, 1814

(type locality, "Habitat in mari Indico"). —

Günther, Cat. Fish. Brit. Mus.,
vol. 8, p. 204, 1870 (types; types
of Hippocampus trimaculatus;
Tenasserim). — Bleeker, Ned.

Tijds. Dierk., vol. 4, p. 126, 1873 (1874)

(reference). — Day, Fishes of India,
pt. 2, p. 682, pl. 174, fig. 7, ¹⁸⁷⁶ (Andamans,
Tenasserim, Pinang, China Sea). —

Elera, Cat. Fauna Filipinas, vol. 1,
p. 598, 1895 (Luzon; Cavite; Santa Cruz).

— Duncker, Mitteil. Naturh. Mus.

Hamburg, vol. 21, p. 189, 1903 (1904)

(reference). — Bedot, Rev. Suisse

Zool., vol. 17, p. 169, 1909 (Amboina).

— Chu, Biol. Bull. St. John's Univ.,

No. 1, p. 99, January 1931 (reference).

Red Sea, Zanzibar, Mozambique,
Natal, Madagascar, Mauritius, Seychelles,
India, Ceylon, Andamans, East Indies,
Philippines, China, Queensland. We
have admitted this as distinct from
Serranus taurina, with which
Boulenger unites it. Our examples
all show the head, body and fins
with large - obscure - or poorly
defined - darker brown spots or
blotches, though none on the lower
surface of the body, as the chest,
breast and belly. The dark
saddles or cross bands on the
body are indistinct or absent in
the adult, though present in the
young. The species is very close
to Serranus taurina, its soft dorsal
rays slightly less, usually 14 or 15,
rarely 16. J

— Chevey, Inst. Océan. Indo Chine,
19^e note, p. 19, August 25, 1932
(Cochin China; Annam).

Hippocampus ⁿⁿ mammulus Cantor,
Journ. Asiatic Soc. Bengal, vol. 18,
p. 1370, pl. 11, fig. 1, 1849 (1850)
(type locality, Sea of Pei nang).

— Kaup, Cat. Lophobr. Fish Brit.
Mus., p. 14, 1856 (China; Macao).

— Blyth, Journ. Asiatic Soc.
Bengal, vol. , p. 173, 1860 (
). — Günther, Fishes of
Zanzibar, ~~1866~~ p. 138, 1866 (Zan-
zibar). — Duméril, Hist. Nat.
Poiss., vol. 2, p. 515, 1870 (Macao).

1388

all finely scaled basally; maxillary expansion with 20 to 23 transverse rows of scales. Scales with 4 to 6 basal radiating striae; 21 to 32 apical denticles, with 7 to 19 transverse series of basal elements; circuli fine.

D. XI, 15, I or 14, I, third spine $3\frac{1}{3}$ to $4\frac{1}{4}$ in total head length, ninth ray $2\frac{1}{4}$ to $2\frac{2}{3}$; A. III, 8, I, second spine 3 to $4\frac{3}{5}$, fifth ray $2\frac{1}{5}$ to $2\frac{2}{3}$; caudal $1\frac{3}{5}$ to $1\frac{7}{8}$, convex behind; least depth of caudal peduncle $3\frac{2}{5}$ to $3\frac{2}{3}$; pectoral $1\frac{3}{4}$ to $2\frac{1}{8}$; ventral $2\frac{1}{10}$ to $2\frac{2}{5}$.

Brown, below paler or of soiled appearance. Head, body and fins everywhere with obscure, ill defined dark blotches, some as spots and irregular or with faded appearance. Fins often darker than body, usually well spotted. Iris brownish.

1592

Hippocampus kampylotrachelos
Bleeker, Nat. Tijds. Ned. Indië,
vol. 7, p. 107, 1854 (type locality,
Priaman); Verslag. Akad. Wet.
Amsterdam, vol. 12, p. 30, 1861
(Singapore). — Duméril, Hist.
Nat. Poiss., vol. 2, p. 524, 1870
(compiled).

Hippocampus chinensis Basilewsky,
Bouv. Mem. Soc. Sci. Nat. Moscou,
vol. 10, p. 249, 1855 (type locality,
"mare orientale; Peking").

Hippocampus manadensis Bleeker,
Act. Soc. Sci. Ind. Neerl., vol. 1,
no. 3, p. (6) 79, 1856 (type locality,
Manado). — Duméril, Hist. Nat.
Poiss., vol. 2, p. 523, 1870 (compiled).

Hippocampus sexmaculatus (Schlegel)
Kaup, Cat. Lophobr. Fish Brit. Mus.,
p. 15, 1856 (name in text).

one but little larger than front one; interorbital $5\frac{7}{8}$ to $6\frac{1}{3}$, slightly convex; hind preopercle edge denticulate, several obsolete with age, few at angle larger; opercular spines 3, upper most advanced and closer to median. Gill rakers $7 + 14$, lanceolate; robust, $1\frac{1}{5}$ in gill filaments or $1\frac{2}{3}$ in eye; 4 or 5 above and 4 or 5 below rudimentary.

Scales 98 to 104 in lateral line to caudal base and $14?$ to 16 more on latter; tubes 57 to 59 in lateral line to caudal base and 3 to 5 more on latter; 16 to 18 scales above lateral line, 30 to 33 below, 60 to 80 predorsal forward nearly to snout end, 33 to 40 rows on cheek from lower eye edge to opercle angle; auxiliary minute scales very numerous basal, though not crowded densely; fins

Trunk $1\frac{4}{5}$ to 2 in tail; head $1\frac{1}{3}$ to $1\frac{3}{5}$ in trunk. Snout $1\frac{3}{5}$ to $1\frac{9}{10}$ in head, slender, more or less conspicuously curved upwards, 1 or 2 eye-diameters longer than postorbital; eye 6 or 7 in head; coronet low, much directed backwards, with 5 blunt tubercles; opercle with distinct radiating ridges; occipital keel behind coronet with 2 distinct spines; supraorbital ^{tubercles} ~~tentacles~~ long, pointed, somewhat directed backwards.

Rings 11 + 38 to 42; tubercles on keels well developed, often conic with rounded granulated top; on first, fourth, seventh and eleventh body ring and on fifth or sixth, tenth, fourteenth, seventeenth and twentieth or twenty-first longer than others. No filaments.

Depth $1 \frac{7}{8}$ to $2 \frac{2}{5}$; head 3 to $3 \frac{3}{5}$, width 2 to $2 \frac{1}{3}$. Snout $1 \frac{1}{4}$ to $1 \frac{2}{5}$; eye $2 \frac{7}{8}$ to 6, $2 \frac{1}{8}$ to $4 \frac{3}{5}$ in snout, 1 to $1 \frac{2}{3}$ in interorbital; teeth 46 to 38 in jaws, small, compressed moderately; maxillary $3 \frac{2}{5}$ to 4 in head; interorbital $3 \frac{1}{8}$ to $3 \frac{1}{2}$, broadly convex. Gill rakers 4 - 9, short, clavate, robust.

Skin very finely asperous, finely velvety to touch; in young scales very small, slightly rougher.

D. VI, 27, 1 or 28, 1, first spine 2 to $2 \frac{1}{2}$ in head, first ray $1 \frac{3}{4}$ to $2 \frac{1}{4}$; A. II, 27, 1 to 29, 1, second spine 3 to $3 \frac{1}{8}$, first ray $2 \frac{7}{8}$ to $3 \frac{1}{8}$; caudal emarginate, hind edge nearly truncate with age, upper and lower tips produced in slender filaments nearly long as head, $2 \frac{3}{4}$ to $3 \frac{3}{4}$ in combined head and body; least depth of caudal peduncle 5 to $5 \frac{3}{4}$ in head; pectoral ^{I $1 \frac{1}{2}$; ventral} $1 \frac{7}{8}$ to $2 \frac{1}{3}$; caudal peduncle with 2 bony bucklers, each with denticle flattened and curved forward, anterior usually larger or its base equals or slightly greater than eye; no bucklers in very young.

D. 19 to 21, on 2 trunk and 2 caudal rings, on basal ridge less than eye, fin height equals third caudal ring or less; A. 4; pectoral rays 17.

Uniform light reddish brown, somewhat paler on ventral side. Ventral trunk keel sometimes dark brown. Length 137 mm.

(Weber and Beaufort.)

Zanzibar, Andamans, Burma, Pinang, East Indies, China, Indo China.

Depth $1 \frac{7}{8}$ to 3; head $3 \frac{1}{2}$ to $4 \frac{1}{3}$, width $1 \frac{7}{8}$ to 2. Snout $1 \frac{3}{4}$ to $1 \frac{4}{5}$; eye $2 \frac{3}{4}$ to $5 \frac{3}{4}$, $1 \frac{4}{5}$ to $3 \frac{1}{2}$ in snout, 1 to $1 \frac{7}{8}$ in interorbital; teeth 60 to 64 in each jaw, slender, little compressed, pointed, in young about 24 to 28 in jaws; maxillary $3 \frac{4}{5}$ to $5 \frac{1}{8}$ in head; interorbital $2 \frac{7}{8}$ to 3, convexly elevated. Gill rakers 4 - 10, fleshy, broad, short.

Body minutely asperous, velvety to touch; young with larger asperities, velvety.

D. VI, 27, 1, or 28, 1, first spine $1 \frac{1}{2}$ to 2 in head, first ray $1 \frac{2}{3}$ to $2 \frac{1}{4}$; A. II, 27, 1 to 29, 1, second spine 3 to $3 \frac{4}{5}$, first ray $2 \frac{1}{8}$ to $3 \frac{1}{8}$; caudal moderately emarginate, becomes slightly lunate with age, old examples with hind edge nearly truncate, $3 \frac{3}{4}$ to $3 \frac{4}{5}$ in combined head and body, to tip of upper lobe $1 \frac{1}{10}$ to $1 \frac{1}{8}$ in head; least depth of caudal peduncle 4 to $6 \frac{1}{4}$; pectoral $1 \frac{1}{5}$ to $1 \frac{1}{2}$; ventral $1 \frac{1}{4}$ to $2 \frac{1}{4}$; caudal peduncle with 2 bucklers, each with compressed denticle and though posterior denticle better developed anterior with longer base or 1 to $1 \frac{3}{5}$ in eye; young without bucklers.

Hippocampus angustus Günther

1595

Hippocampus angustus Günther, Cat.
Fish. Brit. Mus., vol. 8, p. 200, 1870
(type locality, Freycinet's Harbor,
Western Australia). — McCulloch,
Mem. Austral. Mus., vol. 5, ^{pt. 1,} p. 26,
June 29, 1929 (reference).

5886. Calangaman Island, between
Leyte and Cebu. March 16, 1909.
Length 226 mm.

15055 and 15273. Canmahala Bay,
Ragay Gulf, Luzon. March 11, 1909.
Length 193 to 210 mm.

8029. Capulaan Bay, Pagbilao, Chica
Island, vicinity Marinduque. February
24, 1909. Length 251 mm.

9330. Catbalogan, Samar. April 15,
1908. Length 83 mm. [534].

1 example. Cebu market. March 22, 1909. Length 55 mm.

5370. Cebu market. April 5, 1908.
Length 220 mm.

and 11346.

11340, Cebu market. April 4, 1908.

Length 120₁ mm. [501, 500].

4 examples. Cebu market. August 26, 1909. Length 49 to 59 mm.

9254 and 9255. Endeavor Strait,

Palawan. December 22, 1908. Length 215
to 225 mm.

16638. Galera Bay, Mindoro. June
9, 1908. Length 226 mm.

Body little dilated in males, greatest depth half head length, females narrower. Snout equals rest of head.

Body rings 11. Tubercles prominent, acute, without tentacles. Supraorbital spine erect, simple, pointed; lower breast spines double each side. Coronet rather low, connected by narrow, concave, bony bridge with occipital knob.

Dorsal with 19 or 20 rays, on 2 trunk and 2 tail rings.

Snout, head, body and dorsal finely reticulated with brown. Some examples also covered with minute white dots. Length 153 mm.
(Günther.)

Western Australia.

Kiplodus rondeleti Barnard, Ann.

South African Mus., vol. 21, pt. 2, 1927,
p. 690 (Mossamedes, Saldanha Bay,
False Bay, Natal, Zululand).

Xargus capensis Smith, Illustr. Zool.

South Africa, Fishes, 1849, pl. 23, fig. 2.

South East coast of South Africa. $\frac{1}{m}$

Pappe, Synop. Edible Fishes Cape, 1853,

p. 18 (Table Bay and West coast). $\frac{1}{m}$

Günther, Cat. Fishes Brit. Mus., vol. 1,

1859, p. 442 (type; Cape). $\frac{1}{m}$ Bleeker,

Natuurk. Tijdschr. Nederl. Indië, vol.

21, 1860, p. 52 (name). $\frac{1}{m}$ Castelnau,

Mém. Poiss. Afrique Australe, 1861, p. 17

(Cape). $\frac{1}{m}$ Gilchrist and Thompson,

Marine Biol. Rep. South Africa, vol. 2,

1914, p. 96 (habits). $\frac{1}{m}$ Gilchrist, Marine

Biol. Rep. South Africa, vol. 3, 1916, p. 5

(egg). $\frac{1}{m}$ Gilchrist and Thompson, Ann.

Urban Mus., vol. 1, pt. 4, 1917, p. 359 (compiled).

¹⁵⁹⁷
Hippocampus
~~Tarlapiscus~~ breviceps Peters

Hippocampus breviceps Peters, Monatsb.
Akad. Wiss. Berlin, p. 710, 1869
(type locality, Adelaide). — Günther,
Cat. Fish. Brit. Mus., vol. 8, p. 200,
1870 (Tasmania; Australia). —
Duméril, Hist. Nat. Poiss., vol. 2,
p. 521, 1870 (compiled). — Castelnau,

— Klunzinger, Archiv Naturges., vol. 38, pt. 1, p.
44, 1872 (Port Phillip).

(St. Vincent & Gulf, South Australia).

— Klunzinger, Sitzs. Ber. Akad.
Wiss. Wien, Math.-naturh. Kl., vol. 80,
pt. 1, p. 421, 1879 (1880) (Port Phillip).

Macleay, Proc. Linn. Soc. New South Wales, 1881.

— Johnston, Pap. Proc. Roy. Soc. Tasmania, 1881,
p. 135 (Tasmania).

✓
Prodr. Zool. Victoria, dec. 7, pl. 65, fig.
2, 1882. — Ogilby, Cat. Fish. New
South Wales, p. 61, 1886 (compiled). —

^{Hippocampus}
~~Farlapiscus~~ breviceps Peters 1597

Hippocampus breviceps Peters, Monatsb.
Akad. Wiss. Berlin, p. 710, 1869
(type locality, Adelaide). — Günther,
Cat. Fish. Brit. Mus., vol. 8, p. 200,
1870 (Tasmania; Australia). —
Duméril, Hist. Nat. Poiss., vol. 2,
p. 521, 1870 (compiled). — Castelnau,
Proc. Zool. Acclimat. Soc. Victoria,
vol. 1, p. 198, 1872 (Victoria), 243
(St. Vincent's Gulf, South Australia).
— Klunzinger, Sitzs. Ber. Akad.
Wiss. Wien, Math.-naturh. Kl., vol. 80,
pt. 1, p. 421, 1879 (1880) (Port Philip).
— Macleay, Proc. Linn. Soc. New
South Wales, vol. 6^{pt. 2}, p. 305, 1881
(compiled ~~+~~). — McCoy,
Prodr. Zool. Victoria, dec. 7, pl. 65, fig.
2, 1882. — Ogilby, Cat. Fish. New
South Wales, p. 61, 1886 (compiled). —

9846 to 9849. Cagayan, Sulu Archipelago. January 8, 1909. Length 113 to 187 mm.

12951 and 12952. Candaraman Island, Balabac. January 4, 1909. Length 169 to 173 mm.

10781. Dalaganem Island, vicinity eastern Palawan. April 8, 1909. Length 200 mm.

8143. Dasol Bay, west coast Luzon. May 9, 1909. Length 161 mm.

14423. Subat Sorgoson, east coast Luzon. June 23, 1909. Length 215 mm.

21587. Uminian Island. June 4, 1909. Length 115 mm.

9597. Hermana Mayor Island, west coast Luzon. May 8, 1909.

6954 and 13982. Iloilo market. May 31, 1908. Length 160 to 190 mm.

1598

— Duncker, Fauna Sudw. Austral.
Michaelson and Hartmeyer, vol. 2,
p. 247, 1909. — McCulloch, Proc.
Linn. Soc. New South Wales, vol. 40,
pt. 2, p. 262, June 30, 1915 (Cottesloe
Beach near Perth). — Waite and
Hale, Rec. South Austral. Mus.,
vol. 1, no. 4, p. 321, fig. 56, January 29,
1921 (St. Vincent Gulf; Spencer Gulf).

Farlapescis breviceps Whitley, Rec.
Austral. Mus., vol. 6, pt. 4, p. ,
February 13, 1931 (reference).

the variety stellans, differing from the usual run of material chiefly in the presence of contrasted black blotches on the back. These are usually as 4 blotches along the bases of the dorsals, though in the very young at least one at the last dorsal spines frequently greatly contrasted.

12246 and 18932. Batan Island. June 5, 1909. Length 165 to 187 mm.

19470. Batan Island. July 22, 1909. Length 62 mm.

17431. Buluan Island, south of Zamboanga. September 13, 1909. Length 126 mm.

7250 and 7251. Busbus Point, Siasi Island. September 20, 1909. Length 108 to 161 mm.

1599

? Hippocampus tuberculatus Castelnau,
Victor. Offic. Rec. Philadelphia
Exhib. (Res. Fish. Austral.), p. 48,
1875 (type locality, Swan River). —
Macleay, Proc. Linn. Soc. New
South Wales, vol. 6, pt. 2, p. 307, 1881

(copied).
Farlapiscis tuberculatus Whitley, Austral.
zoologist, vol. 6, pt. 4, p. 313, February 13, 1931 (reference).
Hippocampus breveroxtrus (not
Schinz 1822) Woodward, Western
Austral. Year Book, pt. 1, p. 272,
1900 - 1 (1902) (Fremantle).

~~narrow~~, the pectoral more
finely spotted than the others,
though it is very variable as
the dark spots sometimes formed
extremely small.

Red Sea, Arabia, Persian Gulf,
Zanzibar, Mozambique, Natal,
Mauritius, Réunion, Bourbon,
Madagascar, Rodriguez, Seychelles,
Maldives, India, Ceylon, Andamans,
East Indies, Philippines, Riu Kiu,
China, Japan, East Australia,
Queensland, Melanesia, Micronesia,
Polynesia. One of the most abundant
as well as handsome of the groupers
of the Indo-Pacific. Boulenger gives
the maximum size as 320 mm. but
all our examples much smaller.
It is often quite variable and we
have listed some examples under

1800

Head $1\frac{1}{2}$ in trunk. Snout 3 in head, $\frac{2}{3}$ of postorbital; ^{eye $6\frac{1}{2}$ in head,} $2\frac{1}{10}$ in snout; supraorbital ridges converge to form elevation before eyes, each ends posteriorly in blunt spine over middle of eye; eye almost encircled with series of low tubercles; small spine before elevated occiput, which with blunt knobs on summit; small spine at upper angle of opercle and 2 or 3 others on hinder edge; opercles with raised radiating lines.

Rings 11 + 38 to 42. Upper body ridge ends below end of dorsal fin; upper angle of tail begins on one of last 2 body scutes; median lateral ridge continuous with lower caudal ridge; lower lateral ridge ends opposite vent. Edges of each scute ridged, ridges produced as spines or protuberances at all points of

intersection with body angles; every alternate or third spine on dorsal aspect more pronounced, on each side of fin often strongly produced upwards; filaments variable or none, long as or longer than snout, tufted, branched or simple.

D. 19 to 22, on 3 or 4 trunk and 1 caudal ring; pectoral rays 14 or 15; A. 4. Male with trunk extended above large brood pouch, where more than twice as deep as wide, on 1 or 2 trunk rings and 3 or 4 caudal.

Head dark purplish brown, with numerous white, dark edged ocelli. Opercles with additional brown spots. Under side of snout and chin pale with dark brown markings. Several white lines running through eye or latter encircled by series of brown dots. Body and tail dark purplish brown, with numerous, small, white, dark edged ocelli. Under side of

1502

trunk pale, with darker markings
anteriorly. Tail with 13 lighter cross
bars below, or with indications of
lighter rings. Length 70 mm.

(Waite and Hale.)

Western Australia, South Australia,
Victoria, New South Wales, Victoria.

D. 5662. Tana Keke Island (W.), N.
17° W., 12.5 miles ($5^{\circ}43'00''$ S., $119^{\circ}18'$
 $00''$ E.), Flores Sea, in 211 fathoms.

December 21, 1909. Length 65 to 75 mm.
5 examples.

D. 5580. Sibutu Island Peak, S. 82°
E., 23.2 miles ($4^{\circ}52'45''$ N., $119^{\circ}6'45''$ E.),
vicinity of Darvel Bay, Borneo, in 162
fathoms. September 25, 1909. Length 44
to 69 mm. 3 examples.

D. 5293. Escarceo Light, N. 59° W., 6
miles ($13^{\circ}28'15''$ N., $121^{\circ}4'30''$ E.), China
Sea vicinity southern Luzon, in 180 fathoms.
July 23, 1908. Length 65 to 73 mm. 6
examples.

1503

Hippocampus abdominalis Lesson

- Hippocampus abdominalis Lesson,
Bull. Sci. Nat. Ferrussac, vol. 11, p.
127, 1827 (type locality, "immense baie
des îles au Merion" near Zealand);
Mem. ~~Nat.~~ Hist. Nat. Paris, vol. 4, p.
411, 1828 (copied); Voy.
Coquille, Zool., vol. 2, pt. 1, p. 125,
pl. L, fig. L, 1830 (type).
— Bleeker, Verh. Akad. Wet. Amsterdam,
(~~Vis. Van Diemen~~), vol. 2, p. 28, pl. L, fig. 4, 1854
(~~Hobarttown~~, Tasmania). — Kaup, Cat. Lophobr.
Fish Brit. Mus., p. 17, pl. 3, fig. 3 (head),
1856 (West Africa; Australia). —
Günther, Cat. Fish. Brit. Mus., vol. 8,
p. 199, 1870 (Australia; Port Arthur;
Sydney; Tasmania; Georgetown; Tamar
mouth; New Zealand; Bay of Islands).
— Duméril, Hist. Nat. Poiss., vol. 2, p.

20469. Danawan and Vi Amil
Islands, vicinity Darvel Bay, Borneo.
September 27, 1909. Length 96 mm.

867. Limbe Strait, Celebes, Dutch
East Indies. November 10, 1909. Length
328 mm.

19888. Daisy Island, west of Bumbum
Trusan Tando, Bulong, British
North Borneo. January 6, 1910. Length
121 mm.

13660. Sadaa Island, Gulf of Tomini,
Celebes. November 17, 1909. Length 191 mm.

^{and 21524}
831_x Talisse Island, north of Celebes.
November 9, 1909. Length ^{45 to} 297 mm.

13057 and 21197. Gomomo Island,
Pitt Passage. December 3, 1909. Length
65 to 130 mm.

524, 1870 (New Zealand; Australia;
 Archiv Naturg. vol. 38, pt. 1, p. 44, 1872 (Port Phillip);
 Java). — Klunzinger, Sitzb. Ber.
 Akad. Wiss. Wien, math.-naturw. Kl.,
 vol. 80, pt. 1, p. 419, 1879 (1880) (Port
 Phillip). — Macleay, Proc. Linn. Soc.
 — Johnston, Pap. Proc. Roy. Soc. Tasmania, 1881,
 p. 135 (Tasmania).

Mus. Mem., no. 2, p. 72, 1889 (Lord Howe
 Island). — Waite, Rec. Austral. Mus.,
 vol. 5, pt. 3, p. 196, March 11, 1904

(reference); Rec. Canterbury Mus.,

vol. 1, no. 1, p. 15, April 25, 1907.

(reference); vol. 1, no. 3, p. 175, pl. 28,

1911 (off Samar; off Port Hutt,

Chatham Island; 18 to 33 fathoms). —

Duncker, Fauna Sudw. Austral.

Michaelsen and Hartmeyer, vol. 2, p.

247, 1909. — Waite,

McCulloch, Biol. Res. Endeavour, vol. 1,

524, 1870 (New Zealand; Australia;
 Archiv. Naturg. vol. 8, pt. 1, p. 44, 1872 (Port Phillip);
 Java). — Klunzinger, Sitzb. Ber.
 Akad. Wiss. Wien, math.-naturw. Kl.,
 vol. 80, pt. 1, p. 419, 1879 (1880) (Port
 Philip). — Macleay, Proc. Linn. Soc.
 New South Wales, vol. 6, ^{pt. 2,} p. 304, 1882
 compiled). — Ogilby, Austral.
 Mus. Mem., no. 2, p. 72, 1889 (Lord Howe
 Island). — Waite, Rec. Austral. Mus.,
 vol. 5, pt. 3, p. 196, March 11, 1904
 (reference); Rec. Canterbury Mus.,
 vol. 1, no. 1, p. 15, April 25, 1907
 (reference); vol. 1, no. 3, p. 175, pl. 28,
 1911 (off Samar; off Port Hutt,
 Chatham Island; 18 to 33 fathoms). —
Duncker, Fauna Sudw. Austral.
Michaelsen and Hartmeyer, vol. 2, p.
 247, 1909. — Waite,

McCulloch, Biol. Res. Endeavour, vol. 1,

6554, 6574, 10482, 21145. Port
Maricaban, southern Luzon. July 21,
1908. Length 11 to 272 mm.

13373. Port Matalvi, Luzon. November
23, 1908. Length 188 mm.

18629. Saboon Island, Ragay Gulf,
Luzon. March 10, 1909. Length 182 mm.

5687. Santa Cruz, Marinduque.
April 24, 1908. Length 269 mm.

21882. Singaan Island, between Jolo
and Tawi Tawi Group. September 21, 1909.
Length 81 mm.

10887. Yilig, Lubang. July 15, 1908.
Length 160 mm.

8691. Tutu Bay, Jolo Island. September
19, 1909. Length 67 mm.

229. Ulugan Bay, Palawan Island.
December 29, 1908. Length 90 mm. [987].

6634 and 9249. Varadero Bay, Mindoro.
July 23, 1908. Length 230 to 305 mm.

pt. 1, p. 29, pl. 6, fig. 1, 1911;
vol. 2, pt. 3, p. 94, July 3, 1914
(Investigator Strait, South Australia,
12 to 20 fathoms); vol. 4, pt. 4, p. 181,
October 31, 1916 (Miller's Point and
Quarantine Bay, Port Jackson). —
Waite and Hale, Rec. South Austral.
Mus., vol. 1, no. 4, p. 319, fig. 54, January
29, 1921 (Coorong, South Australia;
Devonport, Tasmania). — Fowler,
Proc. Acad. Nat. Sci. Philadelphia,
p. 446, 1921 (types of Hippocampus
bleekeri and H. agnesae). — Weber
and Beaufort, Fishes Indo Austral.
Archip., vol. 4, p. 108, 1922 (Bleeker's
material).

17280. Rabatas Point, Samar Island.

July 24, 1909. Length 167 mm.

8875. near Palao Bay, Luzon.

June 16, 1909. Length 280 mm.

21567 and 21568. North west Verde

Island. July 22, 1908. Length 93 to 115 mm.

1 example. Oyster Point, Ulugan Bay, December 28, 1908. Length 92 mm.

7979 and 12467. Nagapas Bay, Luzon.

February 20, 1909. Length 188 to 303 mm.

1 example. Philippines. Length 200 mm.

[107.]

5902. Polloc, Mindanao Island.

May 22, 1908. Length 225 mm. Brown, abundantly spotted above and on verticals. Pale. Spots fusing on lower side into irregular stripes. Lower head and breast without spots, paler than upper parts. Margin of soft vertical fins almost white, nearly black submarginally.

Hippocampus (macleayina) abdominalis
McCulloch, Mem. Austral. Mus.,
vol. 5, pt. 1, p. 97, June 29, 1929
(reference).

$\frac{1}{m}$ Thompson, Marine Biol. Rep. South Africa, no. 4, 1918, p. 87 (references).

Xargus rondeletii var. capensis Boulenger, Proc. Zool. Soc. London, 1887, p. 658

(muscat). $\frac{1}{m}$ Zugmayer, Abhandl.

K. Bayer. Akad. Wiss., math.-physik. Klasse, vol. 26, band 6, 1913, p. 11

(Lman).

Diplodus capensis Pellegrin, Bull. Soc. Zool. France, vol. 39, 1914, p. 229 (Fort

Dauphin, Madagascar). $\frac{1}{m}$ Fowler, Proc.

Acad. Nat. Sci. Philadelphia, 1925, p. 233 (atal).

Depth $2\frac{1}{8}$; head $3\frac{1}{3}$, width $1\frac{9}{10}$.

Snout $2\frac{3}{5}$ in head; eye $3\frac{2}{3}$, $1\frac{2}{5}$ in snout, $1\frac{1}{3}$ in interorbital; maxillary reaches opposite hind nostril, expansion $2\frac{3}{4}$ in eye, length 3 in head; incisors 8 above, 9 below, molars triserial above and below; interorbital 3, convex.

Hippocampus bleekeri Fowler, Proc.
Acad. Nat. Sci. Philadelphia, p. 426,
fig. 4, 1907 (1908) (type locality,
Victoria).

Hippocampus (Macleayina) bleekeri
McCulloch, Mem. Austral. Mus., vol.
5, pt. 1, p. 97, June 29, 1929 (reference).

Hippocampus agnesae Fowler, Proc.
Acad. Nat. Sci. Philadelphia, p. 429,
fig. 5, 1907 (1908) (type locality, Victoria).

Hippocampus (Macleayina) agnesae
McCulloch, Mem. Austral. Mus., vol. 5,
pt. 1, p. 97, June 29, 1929 (reference).

Pagrus guttulatus Valenciennes, Hist.
Nat. Poiss., vol. 3, 1830, p. 160. New-
Holland, King George's Sound, Jarvis
Bay, New Zealand. — Lesson, Voy.
Cochinille, Zool., vol. 2, pt. 1, 1830, p. 188
(New Zealand). — Richardson, Travels
in New Zealand, Vieffenbach, vol. 2,
1843, p. 209.

Pagrus micropterus Valenciennes, Hist.
Nat. Poiss., vol. 3, 1830, p. 163. Mouth of
Thames River, New Zealand.

Pagrus latus Richardson, Rep. British Assoc.
Adv. Sci., vol. 9, July, 1842, p. 392, Between
Opooragi and Owhorangi, New Zealand.
Sciaenops latus (Solander) Richardson, Proc.
Brit. Assoc. Adv. Sci., vol. 9, July, 1842, p. 392

Hippocampus graciliformis McCulloch,
Biol. Res. Endeavour, vol. 1, pt. 1, p. 29,
pl. 6, fig. 2, 1911 (type locality,
Bass Strait?).

5756. Generalo Island, Capunaypungan.
May 9, 1908. Length 223 mm.

7278. Gigoro Point, Linaupundan Bay,
Vamar Island. July 28, 1909. Length 207 mm.

20512. Guinulugan, east coast Negros.
April 2, 1908. Length 45 mm.

7439. Guntao Island. December 20, 1908.
Length 292 mm.

6109. Iloilo market. June 1, 1908.
off northern Cebu. April 6, 1900.
Length 89 mm.

11239. Mactan Island, Cebu. March
25, 1909. Length 175 mm.

Example. Mactan Island. August 31, 1909. Length 71 mm.

7233. Masinloc Bay, Zambales, off
western Luzon. November 22, 1908. Length
295 mm.

6245, 6264, 6265. Medio Island,
Galera Bay, Mindoro. June 9, 1908.
Length 250 to 300 mm.

17632. Mompog Island, Anabayan
Islands. March 3, 1907. Length 205 mm.

Depth $4\frac{1}{2}$ (female) to 8 (male); head 6 to $6\frac{1}{2}$, width $2\frac{1}{5}$ to $2\frac{2}{3}$. Snout 2 to $2\frac{2}{3}$ in head; eye $5\frac{3}{5}$ to $8\frac{1}{2}$, $2\frac{1}{2}$ to $4\frac{2}{3}$ in snout; interorbital $1\frac{1}{3}$ to $1\frac{2}{3}$ in eye. Gill opening $1\frac{1}{2}$ to 2 in eye.

Rings 12 + 47 or 48. Compressed elevated. occiput with some low knobs; simple spine on upper opercular angle, 3 others equidistant on hind edge; opercle with raised lines radiating from low knob behind eye. Upper body ridge ends below end of dorsal; caudal ridge begins on last 2 body rings and forms upper caudal ridge; median lateral trunk ridge continuous with lower caudal ridge; lower lateral

with dusky centers, those along middle of side with blackish centers. Side of head with orange bronze shades, but without stripes or bars; opercular and preopercular margins bronzy; upper lip pinkish; inside mouth scarlet, but not to gill opening. Dorsal membranes clear vermilion, ends bright. Anal like dorsal, bright vermilion at base. Caudal with brassy overshades extending to middle of sides, edges vermilion. Pectoral rays orange, membranes clear. Ventrals pinkish.

ridge continuous with lower caudal ridge, ends before vent; abdomen with keel, edges of each keel raised and project as blunt spines or knobs. Tail over twice long as trunk.

D. 28 or 29, on 3 to 5 trunk rings and 3 or 4 caudal rings; A. 5; pectoral 15 to 17.

Dull brown, variably with dark markings or mottlings to uniform, sometimes with dark transverse saddles. Dorsal more or less spotted or blotched darker, especially about head.

South Australia, Victoria, New South Wales, Tasmania.

~~Sta.~~ D. 5497. Bantiguei Island,
N. 64° W., 10 miles ($9^{\circ} 07' 15''$ N.,
 $124^{\circ} 59' 30''$ E.), between Leyte and
Mindanao, in 960 fathoms. August
3, 1909. ^{Length} (10 examples. 19 to 44 mm.)

~~Sta.~~ D. 5190. Pescador Island, S. 9° E.,
10.70 miles ($10^{\circ} 8' 15''$ N., $123^{\circ} 16' 45''$ E.),
Tanon Strait, East coast of Negros, in
295 fathoms. April 1, 1908. ~~25 examples~~
^{Length} 12 to 22 mm. 25 examples.

~~Sta.~~ D. 5604. Bilatu (town), N. 26°
W., 8.7 miles ($0^{\circ} 22' 30''$ N., $122^{\circ} 42'$
 $30''$ E.), Gulf of Tomini, Celebes.
November 15, 1909. ~~4 examples~~ ^{Length} 18 or
19 mm. 4 examples.

1604g

A. N. S. P., No. 33122. Victoria.
Mrs. Agnes F. Kenyon. Type of
Hippocampus bleiberi. Length 225
mm.

A. N. S. P., No. 33123. Victoria.
Mrs. Agnes F. Kenyon. Type of
Hippocampus agnesae. Length
175 mm.

D. 5585. Sipadan Island (M.), S.
89° W., 12 miles ($4^{\circ} 7' 00''$ N., $118^{\circ} 49' 54''$ E.), Sibuko Bay, Borneo and
vicinity, in 476 fathoms. September 28,
1909. Length 89 mm.

D. 5552. Jolo Light (E.), N. 60° E., 18.3
miles ($5^{\circ} 54' 30''$ N., $120^{\circ} 44' 15''$ E.). Jolo
Island and vicinity. September 17, 1909.
Length 49 mm.

D. 5125. Hogas Island (W.), S. 11° E.,
24 miles ($10^{\circ} 48' N.$, $121^{\circ} 48' 30'' E.$), Sulu
Sea, vicinity southern Panay, in 411
fathoms. February 3, 1908. Length 66
mm.

1605

Genus Phyllopteryx Swainson

Phyllopteryx Swainson, Nat. Hist. Animals, vol. 2, p. 332, 1839. (Type Syngnathus foliatus Shaw, monotypic.)

Body compressed, wide as deep, inferior contour little or slightly undulate.

Tail long as body, prehensile.

Pair of spines on upper side of snout and above orbit.

Rings smooth, ~~some~~ ~~or all~~ without prominent spines or extensions on edges of body. ^{Lower caudal keel entire.} ~~which may be~~ ~~furnished with~~ [^] few ~~or many~~ variable cutaneous filaments or flaps. Dorsal rather long. Males carry eggs imbedded in soft membrane on lower side of tail, without pouch formed by lateral expansion of integuments.

Genus Apterygocampus Weber

Apterygocampus Weber, Siboga

Exped., vol. 57, Fische, p. 115, 1913.

(Type Apterygocampus epinnulatus
Weber, monotypic.)

"The Leafy Sea Dragon receives its vernacular and scientific names from the curious leaf-like outgrowths arising from spines on its head and body. It evidently lives among weed-covered rocks below low-tide level where it feeds on minute crustaceans, worms and other small animals. It is marked with bright yellow and red, crossed by several violet bars, colours which doubtless camouflage it in its weedy haunts and render it invisible to whatever enemies it may have. Its very small mouth, situated at the end of a long tubular snout, prevents this fish from being hooked, whilst its preference for rocky localities

1607

safeguards it from capture in nets. Few fishermen encounter the Leafy Sea Dragon, therefore, such specimens as are collected are generally found stranded upon ocean beaches after heavy weather. The jointed armour of the Leafy Sea Dragon allows it very little freedom of action apart from moving its gills and fins; it is therefore a weak swimmer and, probably, like its relatives the Sea-horses, anchors itself by its tail to any convenient object for support."

(Whitley.)

Analysis of Species

- a¹ Size larger; back and head smooth; spines and flaps shorter. foliatus.
- a² Size smaller; back and head rugose; spines and flaps longer. lucasi.

Phyllopteryx foliatus (Shaw) 1608

Syngnathus foliatus Shaw, General
Zool., vol. 5, p. 456, pl. 180, 1804
(type locality, New Holland).

1146

Depth $2\frac{1}{4}$ to $2\frac{1}{3}$; head $2\frac{2}{5}$ to $2\frac{2}{3}$,
width $2\frac{2}{5}$ to $2\frac{4}{5}$. Snout $3\frac{1}{4}$ to $3\frac{1}{2}$
in head from snout tip; eye $6\frac{1}{3}$ to $7\frac{3}{5}$,
 2 to $2\frac{2}{5}$ in snout, slightly greater
than interorbital to $1\frac{1}{5}$ with age;
maxillaries not quite reaching opposite
hind eye edge in young to little
beyond with age, expansion little
greater than eye or $5\frac{2}{5}$ to $6\frac{1}{8}$ in
head, length $1\frac{7}{8}$ to 2 in head from
snout tip; teeth conic, sharp, inner
depressible and outer row slightly
enlarged; 3 rows of mandibular
teeth narrowing to single inner
large depressible row posteriorly;
pair of front canines in each jaw;
minute teeth on vomer and palatines;

Hippocampus foliatus Perry,
Arcana, ^{vol. 1,} pl. ~~8~~ 8, 181~~8~~ (type locality,
Botany Bay). — Whitley, Journ.

— Cuvier, Règne Animal, vol. 2, ed. 2, p. 363,
1929.

— Fowler, Mem. Bishop Mus.,
vol. 11, no. 5, p. 324, 1931 (reference).

Hippocampus foliatus Perry,
Arcana^{vol. 1}, pl. ~~8~~¹⁸, 181~~8~~¹ (type locality,
Botany Bay). — Whitley, Journ.
Pan Pac. Res. Inst., vol. 2, no. 1,
p. 4, January - March 1927 (Fiji).
— Fowler, Mem. Bishop Mus.,
vol. 11, no. 5, p. 324, 1931 (reference).

Boat
Jan 1st
Jan 4, Jan
of out

he went.

Serranus taovina (Forsk.)

~~Pom~~ taovina Forsk., Descript. Animal.,
1775, pp. x1, 39. Ajéda, Red Sea. —

Bonnaterre, Tabl. Ichth., 1788, p. 131
(Red Sea). — Gmelin, Syst. Nat. Linn.,
vol. 1, 1789, p. 1316 (Arabia). — Walbaum,
Artedii Pisc., vol. 3, 1792, p. 340 (on
Forsk.).

Holocentrus taovinus Luckow, Naturg. Gesch.,
vol. 4, 1799, p. 523 (Arabia). — Lacépède,
Hist. Nat. Poiss., vol. 4, 1802, pp. 338, 380
(Arabia).

Holocentrus taovina Schneider, Syst.
Ichth. Bloch, 1801, p. 321 (Arabia).

Serranus taovina Klunzinger, Verh.
zool. bot. Gesell. Wien, vol. 28, 1870, p.
683 (Koseir, Red Sea); Fische Roth.
Meer., 1884, p. 6, pl. 1, fig. 3. — Fowler,
Proc. Acad. Nat. Sci. Phila., 1925, p.
225 (Urban Bay); 1927, p. 275 (Orion,

Phyllopteryx foliatus Swainson,
Nat. Hist. Animals, vol. 2, p. 332,
fig. 109, 1839 (reference). — Kaup,
Cat. Lophobr. Fish Brit. Mus.,
p. 21, 1856 (Australia). —
Günther, Proc. Zool. Soc. London,
p. 327, pl. 14, 1865 (Tasmania).
— Duméril, Hist. Nat. Poiss.,
vol. 2, p. 532, 1870 (Australia).
— Günther, Cat. Fish. Brit. Mus.,
vol. 8, p. 196, 1870 (Tasmania, New

beyond, expansion $1\frac{2}{3}$ to 2 in eye,
length $2\frac{1}{4}$ to $2\frac{1}{5}$ in head from
snout tip; teeth small, pointed, in
bands in jaws, pair of canines in
front of each; upper lateral teeth
larger than others, erect, though
inner anterior longest and like
all inner teeth hinged; mandibular
teeth in 3 or 4 rows anteriorly,
narrowing to 2 pairs posteriorly
and all inner ones longest and
hinged; bands of small teeth on
vomer and palatines, none on
tongue; nostrils subequal;

1611

→ South Wales, Port Jackson, Australia)

↑ — Klunzinger, Archiv Naturges., vol. 38, pt. 1, p. 44, 1872 (Port Phillip).

(Hobart Town, Tasmania); vol. 2, p. 76, 1873 (South Australia); Proc. Linn. Soc. New South Wales, vol. 3, p. 356, 1878 (Port Jackson). — Klunzinger, Sitzs. Ber. Akad. Wiss. Wien, naturh.-math. Kl., vol. 80, pt. 1, p. 420, 1879 (1880) (Port Phillip). — Macleay, Proc. Linn. Soc. New South Wales, vol. 6^{pt. 1}, p. 301, 1882 (Port Jackson; South Australia; Tasmania). — McCoy, Prodr. Zool. Victoria, dec. 7, pl. 65, fig. 1, 1882.

↑ — Johnston, Proc. Roy. Soc. Tasmania, 1881 (1883), p. 134 (Tasmania).

Proc. Roy. Soc. Tasmania, p. 134, 1882 (1883). — Uncker, Fauna

1611

→ South Wales, Port Jackson, Australia)
— Castelnau, Proc. Zool. Acclimat.
Soc. Victoria, vol. 1, p. 198, 1872
(Hobart Town, Tasmania); vol. 2,
p. 76, 1873 (South Australia);
Proc. Linn. Soc. New South Wales,
vol. 3, p. 356, 1878 (Port
Jackson). — Klunzinger, Sitzs.
Ber. Akad. Wiss. Wien, naturh.-
math. Kl., vol. 80, pt. 1, p. 420, 1879
(1880) (Port Philip). — Macleay,
Proc. Linn. Soc. New South Wales,
vol. 6^{pt. 1}, p. 301, 1882 (Port Jackson;
South Australia; Tasmania).
— McCoy, Prodr. Zool. Victoria,
→ dec. 7, pl. 65, fig. 1, 1882.
— Ogilby, Cat. Fish. New South
Wales, p. 61, 1886. — Johnston,
Proc. Roy. Soc. Tasmania, p. 134,
1882 (1883). — Uncker, Fauna

Serranus rhyncholepis Bleeker

Serranus rhyncholepis Bleeker, Nat.
Tijds. Ned. Indië, vol. 5, 1852, p. 749.
Celebes. — Günther, Cat. Fishes Brit.
Mus., vol. 1, 1859, p. 105 (copied).

Epinephelus rhyncholepis Bleeker,
Atlas Ichth. Ind. Néerl., vol. 7, 1873-76,
p. 62, pl. (8) 286, fig. 2 (Celebes, Timor).
— Boulenger, Cat. Fishes Brit. Mus., vol.
1, 1895, p. 231 (copied). — Snyder, Proc.
U. S. Nat. Mus., vol. 42, 1912, p. 498
(Okinawa, Riu Kiu).

Südw. Austral. Michaelson and
 Hartmeyer, ^{(vol. 2, pt. 1, Fremantle, Spencer Gulf, Port Phillip, Angas,} p. 236, 1909, Mitteil.
 Naturh. Mus. Hamburg, vol. 32,
 p. 67, 1914 (1915) (South Australia,
 Tasmania). — Waite and Hale,
 Rec. South Austral. Mus., vol. 1,
 no. 4, p. 313, fig. 51, January 29,
 1921 (South Australia). —
Whitley, Austral. Mus. Circular,
 no. 3, fig., June 1927 (Sydney).
 — McCulloch, Mem. Austral. Mus.,
 vol. 5, pt. 1, p. 95, June 29, 1929
 (reference).

St. Vincent Gulf, Port Phillip, Tasmania, Port Jackson.

16267. Teomabal Island, vicinity
of Jolo. September 18, 1909. Length
91 mm.

7660, 7661, 7662, 7663. Usada Island,
near Jolo. March 5, 1908. Length 135 to
184 mm. [383 to 386].

5929. Zamboanga. May 25, 1908.
Length 285 mm.

A1559. Han Wan, Kun Siang, Formosa.
January 25, 1910. Length 288 mm.

13687. Cape Kait, Libani Bay, Celebes.
December 29, 1909. Length 191 mm.

14737. Kayoa Island. November 29, 1909.
Length 173 mm.

1613

Syngnathus taeniopterus Lacépède,
Ann. Mus. Hist. Nat. Paris, vol. 4,
pp. 203, 211, pl. 58, fig. 3¹⁸⁰⁴ (type
locality, New Holland [= Bass Strait (Tasmania)]).

~~Syngnathus taeniopterus~~
Desmarest, Hist. Nat. Poiss., vol.
3, pl. 43, fig. 4, 1835.

Phyllopteryx taeniopterus Fowler,
Proc. Acad. Nat. Sci. Philadelphia,
1907, p. 426 (Portland, Victoria).

→ Phyllopteryx elongatus Castelnau,
Proc. Zool. Acclimat. Soc. Victoria,
vol. 1, p. 243, 1872 (type locality,
St. Vincent Gulf, South Australia);
vol. 2, p. 144, 1873 (Fremantle).

Phyllopteryx elongatus Castelnau,
Proc. Zool. Acclimat. Soc. Victoria,
vol. 2, p. 76, 1873 (). —

Macleay, Proc. Linn. Soc. New
South Wales, vol. 6, pt. 1, p. 303, 1882
(compiled).

17446 and 17631. Mampoy Island,
Tinabuyan Islands. March 3, 1909.

Length 121 to 208 mm.

11753. Pujada Bay, May 15, 1908.
Length 120 mm.

18971. Quinalasag Island, Masamat
Bay, east coast Luzon. June 12, 1909.
Length 210 mm.

7016. Romblon. March 26, 1908.
Length 181 mm.

19589. Simaluc Island, north
of Tawi Tawi Group. September 22, 1909.
Length 91 mm.

12605 and 12606. Sitanbei wharf.
February 26, 1908. Length 125 to 137 mm.

16040 and 16041. Sulade Island,
vicinity of Jolo. September 18, 1909.
Length 124 to 175 mm.

16203. Taganak Island, Jolo Sea.
January 7, 1909. Length 160 mm.

— Fowler, Proc. Acad. Nat. Sci.
Philadelphia, 1907, p. 26 (Portland,
Victoria).

head and body to caudal base.

Silvery, scales edged brown. Head over upper jaw and behind eye, brownish pink. Eye silvery. Fins brown, upper quarter of pectoral brown, with brown patch at base.

South Africa, Natal.

53029 A. N. S. P. Natal coast,
in 7 fathoms. H. W. Bell Marley. 1915.
Length 233 mm.

1615

Hippocampus foliaceus Richardson,
Rep. Twelfth Meet. Brit. Assoc.
Adv. Sci., 1842 (1843), p. 28 (Type
locality, New Holland).

Phyllopteryx altus McCoy, Prodr.
Zool. Victoria, dec. 7, p. 20, 1882
(on Phyllopteryx foliatus Günther
1865)

Depth 6 to $11\frac{2}{3}$; head $4\frac{2}{3}$ to 5.
Snout $1\frac{1}{3}$ to $1\frac{2}{5}$ in head from
snout tip; eye 7 to 10, $5\frac{1}{3}$ to 7 in
snout; pair of small spines on
snout above behind middle, small
spine on front orbital edge, 2
over each eye, small patch of
spines below hind part of eye
and row on lower eye edge;
opercle granulated, with raised
radiating lines; elevated occiput

vol. 28, 1905, p. 203 (Korea). $\frac{1}{m}$ Franz,
 Abhandl. Kon. Bayer. Akad. Wiss.,
 math.-physik. Klasse, vol. 4, suppl. band
 1, 1910, p. 47 (Yokohama; Uburatsubu).
 $\frac{1}{m}$ Snyder, Proc. U. S. Nat. Mus., vol. 42, 1912,
 p. 500 (Riu Kiu).
Eynnies cardinalis Jordan and Thompson,
 Proc. U. S. Nat. Mus., vol. 41, 1912, p. 573
 (Tokyo and Matsushima). $\frac{1}{m}$ Jordan and
Metz, Mem. Carnegie Mus., vol. 6, no. 2,
 1913, p. 34 (Fusan, Korea). $\frac{1}{m}$ Snyder, Proc.
 U. S. Nat. Mus., vol. 42, 1914, p. 415 (Aikawa,
 Misaki, Tokyo, Kagoshima, Otaru, Mororan,
 Hakodate). $\frac{1}{m}$ Tanaka, Fishes of Japan,
 vol. 21, 1915, p. 371, pl. 101, fig. 313 (Japan;
 China). $\frac{1}{m}$ Jordan and Hubbs, Mem. Carnegie
 Mus., vol. 10, no. 2, 1925, p. 241 (Tokyo,
 Kobe, Kagoshima, Misaki, Toyama, Miyazu).
 $\frac{1}{m}$ Ashima, Jap. Journ. Zool., Trans. Abstracts,
 vol. 1, no. 5, March 31, 1927, p. 139 (Formosa,

ends in blunt spine with flap.

Rings 17 or 18 + 32 to 35. Long nuchal spine with flap; pair on back behind middle, pair little anteriorly on belly, 4 pairs nearly equidistant on tail behind dorsal, usually last 2 single flaps. Body much compressed with age, width $3\frac{1}{4}$ in depth in female, lower in male. Body ridges with small points, best developed along dorsal. Upper caudal ridge begins on last 2 trunk rings.

D. 27 to 35, on 1 or 2 trunk rings and 5 or 6 caudal; A. rays 4; pectoral 20 or 21. Brood pouch on 17 or 18 caudal rings.

Brownish to olive. Head and sides with numerous yellow or white dots and some dark lines. Under surfaces yellowish.

Flaps blackish. Fins pale.

1617

South Australia, Victoria,
Tasmania.

A. N. S. P., 4 examples. Portland,
Victoria. Mrs. Agnes F. Kenyon.
1907. As Phyllopteryx taeniopterus.

A. N. S. P., 2 examples. Portland,
Victoria. Mrs. Agnes F. Kenyon.
1907. As Phyllopteryx elongatus.

Phyllopteryx lucasi Whitley 1618

Phyllopteryx lucasi Whitley, Rec.
Austral. Mus., vol. 18, no. 3, p.
162, March 25, 1931 (type locality,
Middleton Beach, Albany, Western
Australia).

Hippocampus foliaceus Richardson,
Rep. Twelfth Meet. Brit. Assoc. Adv.
Sci., p. 28, 1842 (1843) (type locality,
"New Holland" = Western Australia)
(nomen nudum).

Phyllopteryx elongatus (not Castelnau
1872) Castelnau, Proc. Zool. Acclimat.
Soc. Victoria, vol. 2, p. 114, May
1873 (Fremantle).

10969, 10970, 17073. Canmahala Bay,
Ragay Gulf, Luzon. March 11, 1909.
Length 176 to 210 mm.

8717 and 12731. Capulaan Bay, Pagbilao
Island, Chica Island, vicinity of
Marinduque Island. February 24, 1909.
Length 154 to 190 mm.

7618. Cataingan Bay, east of Masbate,
near ship's anchorage. April 17, 1908.
Length 139 mm.

5509. Catbalogan, Samar Island.
April 15, 1908. Length 261 mm.

6933. Catbalogan. April 16, 1908.
Length 186 mm.

7735. Caxisigan Island, Balabac.
January 2, 1909. Length 212 mm. [1022].

6427 and 13333. Caxisigan Island.
January 3, 1909. Length 179 to 221 mm.

19031. Dasol Bay. May 8, 1909.
Length 79 mm.

1619

Phyllopteryx foliatus (not Shaw)
Muncker, Fauna Sudw. Austral.
Michaelson and Hartmeyer, vol. 2,
p. 236, 1909 (Western Australia).

Depth $2\frac{1}{10}$ in head; tail $2\frac{1}{5}$
in total. Snout $1\frac{2}{5}$ in head,
 $3\frac{1}{3}$ times postorbital, pair of
small upper spines $\frac{2}{3}$ from tip;
small preorbital spine and
several serrations between and
supraorbital spines, which long
and acute, front pair directed
obliquely up and back, hind
pair flaring out; eye $8\frac{9}{10}$ in head,
 $6\frac{1}{10}$ in snout, series of irregular
serrations around orbit, 2 small
spines below eye; opercles, nape
and top of head strongly granulated.

membrane terminally behind each spine tip.

Red Sea, Arabia, Zanzibar, Mozambique, Natal, Réunion, Mauritius, Madagascar, Seychelles, India, Andamans, East Indies, Philippines, Riu Kiu, China, Japan, Queensland, Melanesia, Micronesia, Polynesia. The black checked edge to the spinous dorsal is a good diagnostic mark. Bleeker's largest specimen was 292 mm. though none of ours so large.

4966, 5179, 5223, 16296. Alibijaban Island, Ragay Gulf, Luzon. March 6, 1909. Length 96 to 217 mm.

16665 and 22259. Canino Island, near Laet, east coast of Luzon. June 15, 1909. Length 100 to 138 mm.

Rings 17 + 37; ridges with short thorn-like spines, strongest along sides and ventral body surfaces, obsolete on dorsal arch, where numerous granular ridges. Long slender nuchal spine with flap; pair of similar spines on back between tenth and eleventh trunk rings; pair on ventral surface between eighth and ninth trunk rings; 2 pairs of flaps on top of tail; first 2 unpaired caudal spines with leafy flap. Body width $\frac{1}{3}$ depth, upper profile evenly arched, lower profile convex, concave and convex before anal. on 7 rings

D. 30, A. 4; pectoral rays 21.

Brown, tail black below.

Head, sides of abdomen and tail above with small yellow spots, more

1621

or less as vertical bars on snout
end, very small on cheeks. Body
below with 7 oblique violet bars
between pectoral and ventral
spine. Large dark blotch
surrounding small preanal
spines. Length 277 mm. (Whitley.)
Western Australia.

Genus Phycodurus Gill

1622

Phycodurus Gill, Proc. U. S. Nat. Mus., vol. 18, p. 159, 1895. (Type Phyllopteryx eques Günther, monotypic.)

Inferior body contour alternately contracted and expanded. Lower trunk beels spinigerous.

Fleshy or cutaneous fleshy flaps very numerous and extensive. Dorsal set low.

(623)

Perhaps one of the most marvellous of fishes in the resemblance of its flap like appendages to sea weeds, the fishes of this group are certainly one of the most curious of adaptations known of protective mimicry in all nature.

"It is a ghost of a sea-horse, with its winding-sheet all in ribbons around it; and even as a ghost it seems in the very last stage of emaciation, literally all skin and grief. The process of development by which the fish attained to such a state must be the most miserable chapter in the history of 'natural selection'. If this be the 'survival of the fittest', it is easy to understand what has become of the rest + + + never

1624

did the famishing spectres of
the ancient mariner's experience
present such painful spectacles.
If these creatures be horses, they
must be the lineal descendants
of those which were trained to
live on nothing, but unfortunately
perished ere the experiment
had quite concluded. The odd
thing about these strange fishes
is that their tattered remnants
are like in shape and colour to
the seaweed they frequent, so
that they hide and feed with
safety. Thus the long ends of
ribs which seem to poke through
the skin to excite our compassion,
are really 'protective resemblances',
and serve to allure its prey
more effectually within reach

1625
of these awful ghouls + + + + If
this is development, it stopped
here only just in time; one
step more and it would have
been a bunch of belp."

(Tension - Woods.)

Phyllopteryx eques Günther

Phyllopteryx eques Günther, Proc.
Zool. Soc. London, p. 327, ^{pl. 15,} 1865 (type
locality, Spencer Gulf, Port
Lincoln, South Australia); Cat.
Fish. Brit. Mus., vol. 8, p. 197,
1870 (type). — Duméril, Hist. nat.
Poiss., vol. 2, p. 533, 1870 (compiled).
— Macleay, Proc. Linn. Soc. New
South Wales, vol. 6, ^{pt. 2,} p. 302, 1887
(compiled). — Duncker, Fauna
Südw. Austral. ^{vol. 2, pt. 1,} ^(Spencer Gulf; Port Lincoln) Michaelson and
Hartmeyer, p. 237, 1909; Mitteil.
naturh. Mus. Hamburg, vol. 32,
p. 68, 1914 (1915) (South Australia;
Spencer Gulf; Port Lincoln). —
Waite and Hale, Rec. South
Austral. Mus., vol. 1, no. 4, p. 313,
fig. 52, 1921 (South Australia).

scales; fins covered basally with minute scales; maxillary scaleless. Scales with 3 to 16 basal radiating striae, 38 to 48 apical denticles, with 6 or 7 transverse series of basal elements; circuli fine.

D. XI, 16, I or 17, I, fourth spine $2\frac{1}{2}$ to $2\frac{3}{5}$ in total head length, first ray $2\frac{3}{5}$ to $3\frac{1}{10}$; A. III, 7, I, second spine $4\frac{1}{4}$ to $4\frac{3}{5}$, fourth ray $2\frac{1}{2}$ to $2\frac{4}{5}$, caudal $1\frac{4}{5}$ to $1\frac{7}{8}$, convex behind; least depth of caudal peduncle $3\frac{1}{3}$ to $3\frac{1}{2}$; pectoral $1\frac{3}{4}$ to $1\frac{4}{5}$; ventral $2\frac{1}{3}$ to $2\frac{2}{5}$.

In alcohol brown, each scale on body with minute gray white dot. Also small close set white dots over top of head and same extend over fin bases. Iris brown. Fins more or less shaded

1627

— McCulloch, Mem. Austral. Mus.,
vol. 5, pt. 1, p. 95, June 29, 1929
(reference).

Depth $5\frac{1}{3}$, $2\frac{1}{3}$ to $2\frac{2}{3}$ times deeper
than wide; head $3\frac{1}{3}$ in length,
 $1\frac{1}{3}$ in trunk. Snout $1\frac{3}{5}$ to $1\frac{7}{10}$
in head, more than twice
postorbital, small spine on
hind third of each upper edge;
eye 8 to $8\frac{1}{2}$ in head, $4\frac{4}{5}$ to $5\frac{1}{10}$
in snout, pair of supraorbital
spines, bifurcate spine projects
laterally from upper edge of
each orbit; long and slender
or feeble spine on upper opercular
angle; occiput much elevated,
with 2 blunt spines at summit,
bearing bunches of narrow branched
appendages.

Rings 18 or 19 + 36 to 40. hape

Chrysophrys cardinalis Valenciennes, Hist.
Nat. Poiss., vol. 6, 1830, p. 130 (Japan).
 $\frac{1}{m}$ Schlegel, Fauna Japonica, Poiss., pts.
2-4, 1843, p. 69, pl. 33 (Nagasaki). $\frac{1}{m}$
Richardson, Ichth. China Japan, 1846, p.
241 (Canton; China Seas). $\frac{1}{m}$ Bleeker,
Verhandel. Batavia. Genootsch. (Japan),
vol. 25, 1853, p. 31 (Japan). $\frac{1}{m}$ Günther,
Cat. Fishes Brit. Mus., vol. 1, 1859, p. 470
(China). $\frac{1}{m}$ Bleeker, Nederl. Tijdschr.
Dierk., vol. 2, 1865, p. 56 (Amoy); Verhandel.
~~Konink. Akad. Wetensch. Amsterdam, no.~~
~~18, 1879, p. 1 (Amoy)].~~ —
 $\frac{1}{m}$ Rutter, Proc. Acad. Nat. Sci. Philadelphia,
1897, p. 76 (compiled).

Lagrus cardinalis Günther, Cat. Fishes Brit.
Mus., vol. 1, 1859, p. 470 (China); Rep. Voy.
Challenger, vol. 1, 1880, p. 64 (Yokohama).
 $\frac{1}{m}$ Sauvage, Bull. Soc. Philomath., Paris,
series 7, vol. 5, 1881, p. 105 (Swatow, China).

1628
with strong spine, lower half
dilated and compressed to form
ribbed crest with serrated edges,
surmounted with 2 sharp spikes
and long bilobed or trilobed
appendage; pair of slender
spines before lower half of each
pectoral base. many spines strong,
much compressed, base long as
height, end in pair of sharp
points and bear long bilobed or
trilobe leaf like flaps; 1 pair
on arch of dorsal profile, another
on each abdominal dilation, 3 to 5
pairs on upper tail edges, first
pair at hind fourth of dorsal,
2 or 3 single spines with appendages
near end of tail. Long, compressed,
flexible, lanceolate spines,
without flaps and often edges
serrated; along edges of dorsal
surface far as second third of

1629

dorsal fin and singly along middle of ventral surface. Between neck and vent; 3 pairs of very wide compressed spines on ventral surface of tail. Small sharp spines, singly along lateral line and end short space beyond vent, somewhat scattered, spatulate and with serrated edges with age; another series along each of lateral abdominal edges.

D. 35 to 37, on 0 to 1 trunk and 11 caudal rings; A. rays 4, fin high as eye; pectoral rays 19 to 21. Egg area $\frac{3}{4}$ of tail over fourth to twenty-third ring.

Pale brown, darker above. Sides with white or silvery, dark edged stripe across each ring. Appendages dusky. Length 300 mm. (Waite and Hale.)

South Australia:

1631

Family Solenostomatichthyidae

Body compressed, tail very short. Snout greatly produced, as strongly compressed tube - due to long symplectic, quadrate and front part of opercle as long high plates. Mouth small, terminal, oblique, bordered above by premaxillaries. No teeth. Opercle well developed. Gill openings wide. Four complete, lobate gills. Pseudobranchiae large. Single bifid branchiostegal. Vertebrae without articular extensions, 3 front ones suturally united. Olfactory organ open pit, smooth in female, with radiating lamellae in male. Posttemporal attached to skull.

1632

Skin with large stellate ossifications, leaving large, naked interspaces, arranged in longitudinal and transverse rows, forming uninterrupted dorsal and ventral median keel before first dorsal and ventrals, rendering forward part of trunk immovable. No lateral line. Soft dorsal opposite anal, both with numerous simple rays, like those of rounded, long and broad caudal and ventral. Ventrals abdominal, opposite spinous dorsal.

One genus.

1633

Genus Solenichthys Bleeker

Solenichthys Bleeker, Ned. Tijds.
Dierk., vol. 2, p. 183, 1865. (Type
~~Sole~~ Fistularia paradoxa
Pallas, here designated.)

broad band of smaller ones, interorbital 3 to $3\frac{1}{4}$, broadly convex; preopercle edge feebly and minutely denticulate. Gill rakers $17+27$, lanceolate, $1\frac{1}{4}$ in gill filaments, which $1\frac{1}{4}$ in eye.

Scales 48 to 53 in lateral line to caudal base and 8 or 9 more on latter; 10 above, 16 or 17 below, 46 to 50 predorsal forward opposite front eye edge; 18 rows on cheek to preopercle ridge and 5 more over preopercle flange. Scales with 20 or 21 basal radiating striae; 75 to 82 short, slender apical denticles with 10 or 11 transverse series of basal elements; circuli very fine.

D. XV, 12, I to 14, I, last spine $2\frac{1}{8}$ to $2\frac{1}{4}$ in head, first ray $1\frac{7}{8}$ to 2; A. III, 12, I or 13, I, third spine $2\frac{3}{5}$ to 3,

Solenostomatichthys Bleeker, Reich.
Faune Madagascar, Pollén et Van
Dam, pt. IV, p. 76, 1874. (Type
Fistularia paradoxa Pallas, here
designated.)

First dorsal with 5 spines, fin
with short base, spines long.
Soft dorsal and anal long, low,
base elevated, rays 18 to 23,
simple. Ventrals opposite
spinous dorsal, very large, with
spine and 6 bifurcate rays, free
in male, inner edge adnate to
abdomen in female and outer
edges united at base for short
space forming large pouch for
reception of eggs, which fastened

by peduncles on thread-like
filaments of abdominal skin.

Fishes of peculiar appearance
and structure, living partly in
shallow water among sea weeds
and partly in deeper water.
Species few, all closely related.

As the usual name Holenostomus
used for these fishes is
preoccupied in another group
of fishes, Bleeker's name
Holenostomatichthys is here
admitted. Possibly all the nominal
species are to be referred to a
single species.

1636

Solenostomatichthys paradoxus (Pallas)

Fistularia paradoxo Pallas, Sicilegia,
vol. 8, p. 32, pl. 4, fig. 6, 1770 (type
locality, Amboyna).

Solenostomus paradoxus Richardson,
Ichth. China Japan, p. 203, 1846
(probably China?). — Quiméril,
Hist. Nat. Poiss., vol. 2, p. 497, 1870
(China). — Franz, Abhandl. Kon.
Bayer. Akad. Wiss., vol. 4, Suppl.
Band 1, p. 22, 1910 (Ogushi). —

↑ Weber and Beaufort, Fish. Indo
Austral. Archip., vol. 4, p. 27, fig. 14,
1922 (Bleeker's material)
Ann., no. 1, p. 11, January 1931
(reference).

1636

Solenostomatichthys paradoxus (Pallas)

Fistularia paradoxa Pallas, Sicilegia,
vol. 8, p. 32, pl. 4, fig. 6, 1770 (type
locality, Amboyna).

Solenostomus paradoxus Richardson,
Ichth. China Japan, p. 203, 1846
(probably China?). — Quiméril,
Hist. Nat. Poiss., vol. 2, p. 497, 1870
(China). — Franz, Abhandl. Kon.
Bayer. Akad. Wiss., vol. 4, Suppl.
Band 1, p. 22, 1910 (Wuzhi). —
→ Fowler and Bean, Proc. U. S. Nat.
Mus., vol. 62, p. 11, 1922 (Tacao).
— Chen, Biol. Bull. St. John's
Univ., no. 1, p. 97, January 1931
(reference).

5962. Little Vinta Cruz Island
March 26, 1908. Length 283 mm.

8449. Mactan Island, opposite Cebu

→ Band 1,
Fowler and
Mus., vol.
— Chu,
Univ., Ho.

embracing large number of smaller pale spots. In small or young examples small pale spots usually absent or not numerous and larger white spots relatively smaller, less numerous, also much more contrasted. Blackish brown band very distinct in maxillary groove. Iris brownish. Fins all largely with dusky, especially terminally.

Red Sea, Arabia, Mombasa, Zanzibar, Natal, Mauritius, Réunion, Madagascar, Seychelles, India, Ceylon, East Indies, Philippines, Riu Kiu, Queensland, Melanesia, Micronesia. We have no examples quite so large as Boulenger's maximum of 560 mm. The species is well distinguished by the blackish streak in the maxillary groove, the white spots

1237

Solenostoma paradoxum Bleeker,
Nat. Tijds. Ned. Indië, vol. 3, p.
(238) 308, 1852 (Wahai); Verh.
Batavia. Genoot. (Trosk.), vol.
25, p. 29, 1853 (Wahai); Act. Soc.
Sci. Ind. Néerl., no. 7, vol. 2, p. 9,
1857 (Amboina).

Solenostoma paradoxum Bleeker,
Nat. Tijds. Ned. Indië, vol. 6, p.
(458) 506, 1854 (Amboina).

Solenichthys paradoxus Bleeker,
Ned. Tijds. Dierk., vol. 2, p. 183,
1865 (Wahai, Ceram).

scales terminally above. Scales with 6 to 11 basal radiating striae; 28 to 38 apical denticles, with 7 or 8 transverse series, pressed together, only apparent with age; circuli moderately fine.

D. XI, 15, I, third spine $3\frac{3}{5}$ to $3\frac{2}{3}$ in total head length, sixth ray $2\frac{3}{4}$ to $2\frac{7}{8}$; A. III, 8, I, second spine $3\frac{3}{4}$ to $4\frac{1}{2}$, fourth ray $2\frac{2}{5}$ to $2\frac{3}{4}$; caudal $1\frac{4}{5}$ to 2, convex behind; least depth of caudal peduncle $3\frac{7}{8}$ to 4; pectoral $1\frac{3}{4}$ to $1\frac{7}{8}$; ventral $2\frac{1}{4}$ to $2\frac{3}{4}$.

Dark sienna brown, finely spotted grayish to whitish, spots small, close though variably set and distributed and extending over vertical fins. Adults with large, pale blotches about size of eye, irregular and placed close, numerous, often

Depth $5\frac{1}{4}$; head $2\frac{1}{4}$, width $8\frac{1}{2}$.
Snout $1\frac{2}{5}$ in head; eye 11, $7\frac{1}{4}$ in
snout, little greater than
interorbital; maxillary $8\frac{1}{2}$ in
head from snout tip; interorbital
 $1\frac{1}{3}$ in eye, level; opercle with 4
curved radiating striae. Keels of
head little serrate above and
below eye.

Rings 14 + 16; posteriorly on
trunk and on tail alternating
transverse keels incomplete
medially.

D. V - 20, height of first fin
 $1\frac{3}{5}$ in total head, of second fin
 $9\frac{1}{4}$; A. 20, fin height $7\frac{3}{4}$;
caudal peduncle depth $1\frac{2}{5}$ in eye
or $2\frac{3}{5}$ to caudal base; pectoral
rays 22, fin length equals eye;
caudal $2\frac{2}{7}$ in rest of fish;
ventral 3, rays 7.

1641b

Largely pale brown. Membranes of first dorsal with blackish brown. Ventrals dark brown terminally. Outer border of caudal blackish brown.

Zanzibar, Mauritius, Maldives, Ceylon, East Indies, Philippines, Indo China, China, Formosa, Japan.

U. S. N. M., No. 76598. Takao, Formosa. Dr. Fred Baker. Length 125 mm.

Solenostoma cyanopteron Bleeker,
Nat. Tijds. Ned. Indië, vol. 6, p. 507,
1854 (type locality, Waihai, Ceram).

[— Elera, Cat. Fauna Filipinas, vol. 1,
p. 596, 1895 (Luzon; Cavite; Santa
Cruz). — Günther, Journ. Mus.
Godeffroy, vol. 9, pt. 17, p. 428, 1910
(notes Bleeker's locality as misprint
for Waihai).

[— Günther, Cat. Fish. Brit. Mus.,
vol. 8, p. 151, 1870 (China).

Solenostoma cyanopterus Bleeker,
Nat. Tijds. Ned. Indië, vol. 11, p. 95,
1856 (Banda); Act. Soc. Sci. Ind.
Néerl., no. 7, vol. 2, p. 9, 1857 (Amboina).

Scales 90 to 92 in lateral line to caudal base and 12 to 12 more on latter; tubes 47 or 48 in lateral line to caudal base and 3 or 4 more on latter; 14 or 15 scales above, 28 to 30 below, 84 to 90 predorsal, 30 to 34 rows across cheek; fins all finely scaled basally; body scales without auxiliary small basal scales; maxillary scales on expansion in about 17 transverse rows. Scales with 8 basal radiating striae; 43 to 45 apical denticles in 4 or 5 transverse series; circuli fine.

D. IX, 15, I, fourth spine $2\frac{1}{5}$ to $3\frac{1}{2}$ in total head length, first branched ray $2\frac{4}{5}$ to $3\frac{1}{4}$; A. III, 9, I, third spine $3\frac{1}{5}$ to $3\frac{1}{4}$, fourth ray $2\frac{1}{5}$ to $2\frac{1}{4}$; caudal $1\frac{3}{4}$ to $1\frac{4}{5}$, convex behind; least depth of caudal peduncle 3 to $3\frac{2}{5}$; pectoral

Solenostomus cyanopterus Duméril,
Hist. nat. Poiss., vol. 2, p. 497, 1870
(New Guinea). — Franz, Abhandl.
Kon. Bayer. Akad. Wiss., vol. 4,
Suppl. Band 1, p. 21, 1910 (Ojishi,
110 meters). — Fowler, Bull.

— Weber and Beaufort, Fish. Indo Austral.
Archip., vol. 4, p. 26, fig. 13, 1922
(Bleeker's material).

(Condore; Indian Ocean). — Chu,
Biol. Bull. St. John's Univ., no. 1,
p. 97, January 1931 (reference).

[Solenostomichthys cyanopterus
Bleeker, Nederl. Tijds. Dierk., vol.
4, p. 126, 1873 (1874) (reference).

Solenostomus leptorhynchus Tanaka

[Solenichthys cyanopterus Bleeker,
Nederl. Tijds. Dierk., vol. 2, p. 183, 1865 (Wohai,
Ceram).

Solenostomus cyanopterus Duméril,
Hist. nat. Poiss., vol. 2, p. 497, 1870
(New Guinea). — Franz, Abhandl.
Kon. Bayer. Akad. Wiss., vol. 4,
Suppl. Band 1, p. 21, 1910 (Ojishi,
110 meters). — Fowler, Mem. Bishop
Mus., vol. 10, p. 109, 1928 (compiled).
— Borodin, Bull. Vanderbilt Marine
Mus., vol. 1, art. 2, p. 47, 1930 (Polo
Condore; Indian Ocean). — Chu,
Biol. Bull. St. John's Univ., no. 1,
p. 97, January 1931 (reference).

[Solenostomichthys cyanopterus
Bleeker, Nederl. Tijds. Dierk., vol.
4, p. 126, 1873 (1874) (reference).

Solenostomus leptoxema Tanaka

[Solenichthys cyanopterus Bleeker,
Ned. Tijds. Dierk., vol. 2, p. 183, 1865 (Wohai,
Ceram).

Clavus (very unsuitable). — Klunzinger, Verh. zool. bot.
Gesell. Wien, vol. 20, 1870, p. 685 (Klunzinger, Red
Clavus). — Day, Fishes of India, pt. 1, 1875,

Depth $2\frac{2}{3}$ to $2\frac{4}{5}$; head $2\frac{2}{5}$ to $2\frac{1}{2}$, width $2\frac{1}{5}$ to $2\frac{1}{2}$. Snout $3\frac{4}{5}$ to $3\frac{7}{8}$ in head from snout tip; eye 6 to $6\frac{1}{2}$, $1\frac{1}{2}$ to $1\frac{2}{3}$ in snout, greater than interorbital; maxillary reaches little beyond eye, expansion 1 to $1\frac{1}{2}$, length 2 in head from snout tip; teeth form rather wide bands in jaws, in mandible 4 rows anteriorly narrowing to 2 rows posteriorly; pair of canines in front of each jaw, often double; narrow band of fine teeth on vomer and on each palatine; interorbital 6 to $9\frac{1}{3}$; hind preopercle edge with very minute, feeble or obsolete denticles; median opercular spine little nearer lower, which most advanced. Gill rakers $7 + 16$, lanceolate, greatly longer than gill filaments or $\frac{1}{2}$ of eye; 5 above and 5 below rudimentary.

Solenostoma brachyurus Bleeker,
Nat. Tijds. Ned. Indië, vol. 8, p.
(393) 433, 1855 (type locality, Ambona).
— Elera, Cat. Fauna Filipinas, vol. 1,
p. 596, 1895 (Luzon; Cavite; Santa
Cruz).

and its uniformly fine teeth.

8164. Libby Island, Ragay Gulf,
Luzon. March 6, 1919. Length 405 mm.

8678. Batag Island, west near
Lewing Point, east coast of Luzon.
June 2, 1909. Length 355 mm.

21852. Cannahala Bay, Ragay Gulf,
Luzon. March 11, 1909. Length 120 mm.

[1304].
5399. Cebu market. April 7, 1908. Length 187 mm.
21766. Cebu market. March 20, 1909.

21766. Cebu market. March 20, 1909.

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Solenostomus armatus Weber,
Siboga Exped., vol. 57, Fische, p.
103, fig. 33c, 1913 (type locality,
lat. $2^{\circ}35'5''$ S., long. $131^{\circ}66'2''$ E.,
in 95 meters, Arafura Sea; New
Guinea). — Fowler, Mem. Bishop
Mus., vol. 10, p. 110, 1928 (compiled).
— Weber and Beaufort, Fish. Indo
Austral. Archip., vol. 4, p. 28, fig. 15,
1922 (type).

Solenostomus heterosoma Tanaka,

9295. Murciágon Bay, Mindanao
Island. August 9, 1907. Length 392 mm.
4 examples. Nozani Point, Panay. February 4, 1908. Length 24 to 90 mm.
21580 to 21582. Tilas Island, south

of Zambounga. September 12, 1909.

Length 35 to 93 mm. 4 examples.

6560. Port Maricaban, China Sea,
vicinity southern Luzon. July 21, 1908.

Length 530 mm.

~~5399. Ragay River, Ragay Gulf.~~

11605 and 11606. Sablayan, Mindoro
Island. December 12, 1908. Length 70 to
123 mm.

22459. Sablayan. December 13, 1908.
Length 530 mm.

9115, 9127, 9128. San Roque, Leyte
Island. July 29, 1909. Length 283 to
508 mm.

4 examples. Sinalue Island. September 23, 1909. Length 72 to 110 mm.
6620 to 6622. Sinalue ~~Island~~

Sibi Sibi Island, north of Tawi Tawi.
September 23, 1909. Length 119 to 151 mm.